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INTERNATIONAL AFFAIRS



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SOCIALIST COMMUNITY AND CEMA AFFAIRS

DISCUSSION OF CEMA SCIENTIFIC-TECHNICAL PROGRAMS

Bulgarian Program

Moscow EKONOMICHESKOYE SOTRUDNICHESTVO STRAN-CHLENOV SEV in Russian No 11, Nov 85 pp 19-23

[Article by Neyden Naydenov, first deputy chairman of the Bulgarian Gosplan: "Improvement of Planning and Control of Scientific and Technical Progress in Bulgaria"]

[Text] The high-level economic conference of the CEMA countries (1984) defined the leading unit of their economic strategy in the modern stage--comprehensive acceleration of scientific and technical progress. It also earmarked the priority directions for the next 20 years: the introduction of electronics into the national economy, comprehensive automation, including the introduction of flexible automated productions, accelerated development of atomic energy engineering, the creation and assimilation of new materials, new technologies and biotechnologies.

Acceleration of scientific and technical progress is of decisive significance for further construction of a developed socialist society in Bulgaria. Extensive application of the high achievements of the scientific and technical revolution is a necessary condition for conducting the strategic course of the Bulgarian Communist Party toward all-around intensification of the national economy. The introduction of the leading technologies is an important prerequisite for effective utilization of raw materials, processed materials, fuel and energy. Today the scientific and technical revolution is opening up possibilities of utilizing new raw material and creating materials with preliminarily given properties as well as more extensive application of new sources of energy. Comprehensive automation and mechanization of production on the achievements of electronics and robot equipment and the creation of flexible automated production systems are essentially changing the nature and content of labor and providing conditions for rapid growth of its productivity.

An important factor in accelerated introduction of the latest scientific and technical achievement is improvement of planning and management of scientific and technical progress, taking into account the creation of the economic and

organizational prerequisites for comprehensive development and rapid realization of scientific discoveries.

In the existing economic mechanism in Bulgaria throughout the current 5-year period special attention has been devoted to the creation of conditions for the introduction of the achievements of the scientific and technical revolution. For management organizations we are establishing state planning assignments which arise from the national comprehensive programs for science and technical progress and for the introduction of achievements, and time periods are being determined for their introduction as well as the scale of application and the expected effect. The scientific and engineering-introduction organizations' assignments are established for scientific research and development.

In keeping with the decisions of the National Party Conference (1984), or economic organizations assignments are set for improving quality and raising the technical level of products, and for individual items concrete technical and economic parameters which should be achieved within the corresponding year are indicated.

Counterplans of economic enterprises, except for the state planning assignments for the introduction of scientific and technical achievements, and envision the assimilation of other progressive innovations at the suggestion of the labor collectives.

The development of prognoses and comprehensive target programs for scientific and technical progress are of great significance. The State Committee for Science and Technical Progress is the main one to engage in the organization of this activity, with the participation of scientific and other institutions. Under the committee, as state agencies they have formed national councils for the development of strategic directions for scientific and technical progress (automation, electronics, the application of biotechnologies, the creation and production of new materials and so forth) which coordinate and lead scientific research and engineering-introduction work in the corresponding areas.

An essential function in the introduction of the achievements of scientific and technical progress is performed by the expert technical and economic councils which evaluate the technical, technological and organizational level of the investment objects that have been earmarked and also the items that are being assimilated.

Organizational prerequisites are being created for closer interconnections between science and production through expanded formation of the scientific production units. This, in turn, contributes to acceleration of the introduction of scientific-technical achievements into practice.

The decisions of the February (1985) Plenum of the Central Committee of the Bulgarian Communist Party are exceptionally important for further improvement of planning and management of scientific and technical progress in Bulgaria. In the report by Comrade Todor Zhivkov at the plenum he points out that it is necessary to sharply improve the planning basis in the management of science and scientific and technical progress. The problems and requirements

of scientific and technical progress are the main task and the basis for all of the socioeconomic policy for the construction of developed socialism.

In keeping with the points made at the plenum, planned leadership of science and technical progress should be placed on a principally new basis by means of making radical changes in the content and organization of planning activity.

Up to this point, according to the existing methodological documents, one of the divisions of the state plan is devoted to science and technical progress. This division includes indicators which characterize the development of science and the introduction of scientific and technical achievements. On this basis the corresponding state planning assignments are also established for the economic organizations. In developing the planning assignments for science and technical progress efforts are made to achieve more complete coordination of these with the indicators of other sections of the plan.

In his introduction speech at the plenum Comrade Todor Zhivkov said: "Scientific and technical progress is not and cannot be a division of the state plan. The state plan itself should be transformed into a plan for scientific and technical progress which provides for the socioeconomic development of the country in the given period."

It is necessary to make a radical change in the content of planning. The plan should determine the main goals and provide for the final national economic results on the basis of scientific and technical progress. The plan for socioeconomic development should essentially be transformed into a plan for the achievement of the goals and tasks by means of a scientific and technical revolution.

With the issue stated this way it becomes exceptionally important to determine the goals correctly since the rates and directions of the development of the economy and its effectiveness will depend directly on this. This is why it is necessary to raise the level of the utilization of the program-target approach in planning activity.

When drawing up the plan certain national goals should be concretized for the various branches, economic organizations and labor collectives. In keeping with the new points, it becomes especially important to select the goals and directions for the development of scientific and technical progress corresponding to the national level, the branch level and so forth. Thus all management and executive personnel of management agencies and enterprises should be given concrete tasks for achieving goals of scientific and technical progress and their rights, duties and responsibilities should be determined.

It is also intended to improve qualitatively the development of balances. Currency, financial, labor, material and other balances should be drawn up taking into account the requirements and capabilities of modern scientific and technical progress.

In order to carry out the tasks that have been set it is necessary to improve the methods for determining the effectiveness of innovations and investment objects, as well as the indicators of effectiveness which are used at all

levels of planning. These methods and indicators should be brought into line first of all with the new criteria for profitability and the ability to compete.

With the existing system scientific and technical progress is characterized and evaluated mainly according to indicators that reflect the number of tasks that have been revised and introduced and their economic effect. This way the first indicator includes both the large strategic tasks as well as the small ones. In the future it will be necessary to determine new indicators in this area. At the national level they should characterize the scientific and technical level of the economy and its effectiveness. To these ends it is possible to adopt indicators which reflect expenditures of live labor and expenditures of raw material and energy per unit of national income. At the level of branches, economic organizations, enterprises and brigades these indicators should be established in keeping with the specific features of their economic activity.

With the new approach an especially important requirement is to place planning on a qualitatively new normative base and to create conditions for differentiated influence of the state on the work of economic agencies without regulating their activity. Subsequently the interest of the labor collectives in fulfilling both state goals and goals contained in their counterplans will be created and regulated by economic means. When drawing up and carrying out counterplans economically one should create prerequisites for the development of initiative and creativity at the labor collectives in order to accelerate the introduction of the achievements of the scientific and technical revolution, which leads to increased labor productivity, higher quality and a reduction of production costs. As a result, more funds will be allotted for raising the technological and technical level of production, conducting social measures, and increasing the labor remuneration. The incomes of economic organizations, the means for their development and also the social results of the amount of the earnings of the labor collective should depend on innovations in production and control of it. In the future the failure to fulfill state assignments for scientific and technical progress will be the main thing that will be regarded as a failure to fulfill the state plan.

With this kind of approach accelerated application of the leading achievements should be the main unit in all the production activity of each labor collective, which will increasingly be transformed from an object into a real subject of scientific and technical progress.

Even this year essential changes have been made in the system of incentives for the introduction of scientific and technical achievements. Incentives for introduction collectives depend directly on additional profit obtained as a result of the introduction. During the past 5 years the collectives have been paid a share of the additional profit that has been realized. Additionally, it is permitted to give one-time bonuses to those who have engaged directly and rendered assistance in the introduction of innovations at the enterprise.

Realizing this new approach requires a restructuring of the activity of the State Committee for Planning. The main thing in this work will be planning scientific and technical progress and, on the basis of this, all of the

country's socioeconomic development. An important position will be held by the development of long-range goals and the drawing up of the system of balances on the basis of scientific and technical progress. In this connection it is intended to release the committee for the fulfillment of operational dispatcher functions.

The realization of the proposed approach in drawing up and carrying out the plan creates conditions for transforming scientific and technical progress into the basis, the essence of the plan. As was emphasized in the speech of Comrade Todor Zhivkov at the plenum, conditions are also being created for transforming the structural units of our economy--combines, economic organizations, corporations and associations--into self-regulating systems which will satisfy effectively and well the domestic market and the needs for Bulgaria's participation in international division of labor. All this should be done on the basis of certain national strategic goals and should correspond to the principles contained in the provision concerning the ownership and mastery of socialist property.

In keeping with the decisions of the February (1985) Plenum, an important area for improving the management of science and scientific-technical progress is the development and extensive application of program organization of science.

Program scientific collectives are formed in keeping with certain state goals, and each of them is made responsible for the creation of a specific scientific product.

Taking into account the requirements for the acceleration of the introduction of scientific and technical achievements it is envisioned that comprehensive program scientific collectives be created, which will include all phases of the cycle of research-production.

For the program collectives it is suggested that they attract scientists and specialists of various sections, departments, institutes, VUZes and other institutions, and if necessary--even from abroad.

The managers of the program collectives should be creative individuals who are capable of suggesting new ideas and embodying them in concrete technical and technological decisions.

It is suggested that program councils be created consisting both of scientists and of representatives of the client and the economic introducer organization. The councils will discuss and evaluate the results achieved by the program collectives.

After the achievement of the goal for which the program scientific collective was created it can be disbanded or it can begin to work under a new program.

In order to carry out the tasks the program collective is given extensive rights and also strict responsibility. On the basis of extensive discussion with the participation of all members, themes and tasks are concretized and their fulfillment is organized. The program collective distributes the work among the specialists, discusses all issues related to norm setting and wages,

organizes the work and provides for efficient utilization of the material base. When developing the counterplan and fulfilling it it creates possibilities of developing the initiative of all participants in order to reveal reserves for prompt achievement of the goal that has been set.

The program scientific collective will be created and will function in keeping with the requirements of the economic approach and its mechanism. It will work as a self-regulating system according to the principle of the "black box theory." In keeping with this it will be given concrete goals of creating a scientific product and will be granted the financial, labor, material-technical and other resources necessary for this. The program collective makes a commitment to obtain certain scientific results. The higher organization which has provided everything necessary should check and demand the output of the corresponding result, particularly a scientific product. In connection with these requirements the agreements in this area will also be improved.

Improvement of management of science and scientific-technical progress is related to the development of the state-public basis. It is intended to create a state-public association which should include academies of sciences, VUZes, scientific institutes, program collectives, introduction, social and other organizations which engage in science, scientific and technical progress, and experimental and introduction activity. Joined into an association, they will have a relatively large degree of independence.

The association will render assistance to state agencies when forming goals of the country's scientific and technical development, it will concretize state goals in the area of science and technical progress, it will organize the development of predictions and long-term plans for the development of the national economic complex and individual branches, and it will also assist the ministries and departments in the preparation of plans for scientific and technical progress. The association will provide for the creation of scientific products taking into account their utilization when preparing for and implementing scientific and technical programs. Because of this it will coordinate the work and grant the necessary conditions--the base, material and other resources--for the corresponding scientific subdivisions.

The scientific and technical revolution is now developing very dynamically and its peculiarity is the process of integration of individual scientific areas. Discoveries in any area of science, in turn, bring about rapid development of other scientific areas or lead to the appearance of new ones. It is extremely difficult to determine precisely which area of science will be the most promising and effective for the country in the future so as to direct the efforts of the scientific potential there first of all. All this objectively requires that our country participate in the development of the main areas of science and scientific and technical progress, which will make it possible to react rapidly to progressive new tendencies in them.

In Comrade Todor Zhivkov's report at the February Plenum it is emphasized that it is necessary to introduce a certain concreteness in the views regarding the selective policy in the area of science and scientific-technical progress in Bulgaria. In the future it will be necessary to actively develop those

areas of science and technology which are directly related to the needs of the economic policy from the standpoint both of internal development and Bulgaria's participation in the international division of labor; to maintain a certain scientific and scientific-technical potential in all areas that form the image of modern science; to provide for obtaining information; to have a precise idea of the condition and the directions for the development of modern science and technology; and to know clearly which of these are the leading ones and what the new scientific paths and problems are.

In the new situation when carrying out the selective strategy one should also approach scientific developments and research appropriately. In the future we should create our own research which is directly related to our overall strategy and to the tasks of the economic, social and spiritual development of the country. At the same time in certain scientific areas it is necessary to continue to study foreign achievements and experience in order to use them after the corresponding adaptation to the country's needs. Additionally, it is necessary to have research units which would check on the state of affairs in other areas of science in order to constantly obtain information about the development of modern science and technology in the world. If some direction turns out to be promising for our country as well, these research units will be able to begin active scientific research and experimental activity.

The application of the selective policy and the corresponding change in the structure of the scientific potential will make it possible to concentrate efforts on solving the key, strategic problems of scientific and technical development and at the same time maintain the necessary minimum of scientific personnel in other spheres. Thus conditions are created to manifest great flexibility and to react rapidly to dynamic changes in all areas of the scientific and technical revolution.

The new approach in the utilization of standardized modern technologies is especially important.

A major peculiarity of major technologies is their standardization, their gradual coming together and the unification of their basic characteristics. This creates conditions for the application of individual technologies in various branches and productions and for a gradual to multiplication of technologies, which increases the economic effect.

Taking into account the requirements for accelerated introduction of modern standardized technologies into production and other spheres of social activity, at the present time a task is being set to orient planning of scientific research work primarily toward the achievements which make it possible to integrate and standardize technologies.

Cooperation with the CEMA countries occupies an important place in our country's scientific and technical policy. The powerful scientific and technical potential of the Soviet Union is of immense significance for the development and extensive introduction of achievements of the scientific and technical revolution in Bulgaria.

Bulgaria is conducting a consistent policy of close coordination of plans for scientific and technical progress with the USSR and the CEMA countries, considering this to be an important factor in accelerated development and introduction of scientific and technical achievements, which contributes to the creation of conditions for deepening Bulgaria's participation in socialist economic integration. Because of international cooperation a scientific and technical base is provided for a considerable part of the production in whose specialization and cooperation Bulgaria participates.

With multilateral and bilateral scientific and technical cooperation joint developments are being conducted on many subjects, and the majority of them devoted directly to solving problems of material production, mainly the creation of new and improvement of existing technologies and items. The majority of research is being carried out jointly with scientific organizations of the Soviet Union. It pertains mainly to strategic directions of scientific and technical progress. Of exceptional significance in this respect is the long-term program for the development of economic and scientific-technical cooperation between the People's Republic of Bulgaria and the Union of Soviet Socialist Republics for the period up until the year 2000, which was signed at a high level.

In keeping with the decision of the Moscow economic conference, the CEMA countries have begun joint development of a comprehensive program for scientific and technical progress for 15-20 years as a basis for the development of a coordinated scientific and technical policy.

The implementation of the comprehensive program for scientific and technical progress of the CEMA countries for 15-20 years will provide for purposive and effective utilization of the scientific and technical potential of the sister countries for purposes of acceleration of their socioeconomic development.

Hungarian Program

Moscow EKONOMICHESKOYE SOTRUDNICHESTVO STRAN-CHLENOV SEV in Russian No 11, Nov 85 pp 23-29

[Article by Lajos Faludegi, deputy chairman of the Hungarian Council of Ministers, chairman of the Hungarian Gosplan: "Planning and Management of Scientific and Technical Progress in Hungary"]

[Text] The overall goal of the CEMA countries is to achieve a higher level of socioeconomic development. A decisive prerequisite for this is acceleration of scientific and technical progress and more rapid introduction of its results into public reproduction. The highest achievements of science and technology of our time serve as a criterion for the development of the entire socialist community and each of the sister countries.

On a Multilateral Basis

The results of the multifaceted cooperation of the CEMA countries clearly confirm that new possibilities of economic development for the good of the nations that are constructing socialism lie in efficient division of labor and

consolidation of spiritual and creative forces. Hence the decisions of the High-Level Economic Conference of the CEMA Countries (June 1984) and the Conference of Secretaries of Central Committees of Communist and Workers' Parties of the CEMA Countries Regarding Economic Issues (May 1985) emphasize the need for a significant stride in the intensification of the national economies through rapid and more extensive introduction of advanced technological innovations.

Cooperation of the CEMA countries and scientific and technical progress are the motive force of socialist development for our country as well. During the 40 years that have passed since the day of Hungary's liberation of the most profound changes have taken place in the life of the Hungarian people, the basis for which was laid by the creation of socialist production relations. Large-scale industrial and agricultural production became predominant, universal secondary education was introduced, the personnel of VUZes and scientific research institutes increased many times over, and there was a significant increase in the results they achieved. All this, on the one hand, brought about the need and the readiness for the introduction of scientific and technical achievements and, on the other hand, it made it possible to begin to reach the levels of leading world achievements on a broader front.

But during the first half of the 1970's the scientific and technical development of the Hungarian national economy slowed down as compared to the accelerating world processes. Moreover, as a result of the price "explosion" for raw materials and energy bearers on the world market the conditions for foreign trade exchange deteriorated significantly. This brought about a critical need to adapt the structure of the national economy to the changes that were taking place. Since this process began to develop at fairly rapid rates, the foreign economic balance was disturbed.

During the second half of the 1970's the prerequisites for making structural changes were created both in the area of economic policy and in economic management. Further deterioration of the foreign economic conditions (another sharp increase in prices for petroleum and the critical condition of international indebtedness) forced us to concentrate efforts and resources primarily on the restoration and consolidation of the foreign economic balance. During this period fewer resources were allotted for reconstruction and technical development and were required, but even so it would hardly have been possible to achieve an acceleration of the transformation of production and the structure of output or to essentially increase the effectiveness of economic activity.

Therefore a most important task of forthcoming years is to overcome these difficulties and increase the dynamism of Hungary's economic development. This is one of the main tasks set by the 13th Congress of the Hungarian Socialist Workers' Party which was held in March 1985.

In order to reach the earmarked goals, the decisions of the congress point out the need to utilize more effectively in foreign economic relations, and mainly in further development of cooperation with the CEMA countries, the advantages of international division of labor which contributes to the acceleration of technical development.

For 2 years now the sister countries, including Hungary, have been coordinating the national economic plans for 1986-1990. This shows that all of the countries are striving together for dynamic development of the national economies and, in the interests of this, acceleration of technical development, for which, in addition to internal factors, they are using impulse factors obtained as a result of deepening and expansion of cooperation.

By way of laying the foundation for economic cooperation for the next 5 years, in keeping with the decision of the High-Level Economic Conference of the CEMA Countries, our countries have already started to coordinate their economic policies in the area of international cooperation for the long-range future. New possibilities and effective forms are being earmarked for embodying the strategic directions for technical development which are of mutual interest. During the course of this activity we are jointly preparing a comprehensive program for scientific and technical progress for 15-20 years, which, in addition to providing a reliable basis for fuel and raw material support for our countries for the long-range future, will be directed toward the creation and introduction into the key branches of production of efficient and economic technical equipment and technology which corresponds to the world technical level; toward increased production of foodstuffs and industrial consumer goods through the utilization of modern production methods; and toward the adaptation of the development of the country's transportation potential for the steadily growing needs.

Consequently, our activity typically includes a striving for comprehensiveness and solidarity which takes into account the possibilities of international cooperation in the unified sphere of technical equipment, material production and capital construction, as well as toward making our own appropriate contribution to accomplishing this.

It should be noted that the existing technical potential of the socialist countries and the limitedness of their resources make it impossible to reach the most advanced levels of scientific and technical progress in all areas within one or two planning periods. Our country's efforts in the forthcoming period will be directed toward preventing a deepening of the so-called technological gap and toward approaching the highest level in individual priority areas.

Especially important for Hungary, with its relatively small-scale, open economy, are motive forces of scientific and technical progress which are the result of international division of labor, mainly among the CEMA countries. A large role in this is played by bilateral long-term programs for economic and scientific-technical cooperation up to the year 2000 which have been signed, for example, with the Soviet Union and the German Democratic Republic. They are also being developed with other CEMA countries. In keeping with these programs we coordinate the most important areas of economic and scientific-technical cooperation which are of mutual interest and we develop the corresponding branch subprograms.

The aforementioned forms of cooperation contribute to more successful concentration of domestic resources on the solutions to key problems of scientific research and technical development and they make it possible thus to take advantage of the achievements of the partners and also participate along with them in the corresponding work.

Our rich experience in scientific and technical cooperation confirms that direct ties between scientific research institutes and enterprises of the CEMA countries are an effective and very fruitful form of practical introduction of the results that have been achieved and thus of acceleration of scientific and technical progress. The direct and multifaceted ties in scientific and technical cooperation on a contractual basis contribute to strengthening the coordination of research work, production and sales, to economic stimulation of practical scientific research, to acceleration of introduction work, and to rapid and clear accounting for requirements and demands.

The mutual commitments for the performance of the earmarked jobs and the assimilation of the results that have been achieved should be registered in the corresponding agreements, and the transfer of licenses and knowhow should be done on the basis of mutual interest. Special attention should be devoted to the expansion of direct cooperation among enterprises in the area of research and technical development.

Taking into account the fact that strengthening such forms of integration ties serves the joint interests of the CEMA countries, in the Hungarian system of economic management the necessary conditions for this will continue to be created in the future.

At the present time during the course of coordinating national economic plans in branch work groups for economic and scientific-technical cooperation, more and more attention is being devoted to determining the spheres for the establishment of direct ties. Economic organizations regularly report on which enterprises and planning-technical organizations of other CEMA countries have been given the authority to establish direct ties. After the completion of the coordination the results will be summed up and proposals will be made concerning the areas in which expansion and increased effectiveness of direct (technical, production and commodity exchange) ties can be expediently maintained and the means of cooperation which should be used.

In the Hungarian system of economic management three basic methods of accelerating scientific and technical progress are envisioned:

long-term national economic planning which earmarks the main reference points for solving problems of scientific and technical progress;

medium-term national economic planning which determines the key aspects of technical development and the corresponding concrete programs;

the system of economic management, primarily the stimuli for increasing the overall interest in technical development which are used in dealing with the enterprises in the interests of working in the directions and accomplishing the tasks that have been earmarked.

Management of the totality of socioeconomic processes can only be a long-range project. The achievement of certain scientific results also requires a long period of time. Therefore in long-term planning we shall strive for a comprehensive, scientific approach in order to reveal the stable processes in the development and the long-term consequences of our current activity. The results of long-term planning are periodically compared with the international and domestic directions for socioeconomic development. A systematic analysis of the formation of internal and external economic conditions has confirmed the decisive significance of acceleration of scientific and technical progress in the achievement of our socioeconomic goals and have made it possible to earmark the main directions for the country's scientific and technical development.

International practice shows that at the present time the development of technology is the most effective and important factor in increasing the effectiveness of production. The peculiarities of the Hungarian economy, the level it has reached and the conditions for its further successes have made it necessary to concentrate our efforts on such decisive areas as the application of material- and energy-saving technologies, the development and introduction of technologies for salvaging wastes and secondary raw material, extensive use of electronics and microelectronics, and the development and practical application of biotechnology.

The first two directions for the development of technologies have penetrated so strongly into the spheres of production in the world that it is unthinkable to increase the effectiveness and competitiveness of production without utilizing the latest results in this area. In the assimilation of biotechnology this effect is still being manifested with such force that, in addition to the results which will be applied in the near future, the development of biotechnology is becoming the basis for further economic progress.

The Basic Directions for Scientific and Technical Development in Medium-Range Planning

The main task of current planning is to establish the way in which the basic directions of long-term planning can be translated into the language of economic actions. In preparing at the present time for the five-year national economic plans for 1986-1990 we have been striving to determine those areas of economic and social life where the greatest result can be expected from the practical introduction of the best scientific and technical achievement.

The law concerning the five-year national economic plan will determine the economic policy for this period, its main goals and the system of means of achieving them. The adoption of the law concerning the five-year plan will be preceded by a long, almost 3-month process of planning work. During the course of this we shall formulate the goals and suggestions for the economic policy, draw up the concepts of the plan, and develop the draft of it on the basis of constantly updated information taking into account the international coordination of plans and the coordination of public interests at various levels. Additionally, we are preparing analyses of world economic processes

and internal socioeconomic factors and developing technical economic substantiations and concepts regarding the most important spheres of material production. Then partial concepts of the economic policy and the so-called block concepts, which consider the possibilities of the development of production branches, are drawn up.

This work is necessary for a clear determination of the proportions and goals of the national economic plan and at the same time it makes it possible for the entire national economy and the enterprises directly to prepare for its fulfillment.

Thus all means of national economic planning are in the service of practical introduction of the achievements of scientific and technical progress into the social and economic life.

One of the partial concepts of the economic policy which substantiates the five-year plan is the concept of the policy for technical development which, relying on the results of long-term planning, the main international tendencies in this area and interconnections among various branch technical and economic concepts, determines the main directions for the technical development of the national economy.

Taking into account the condition of the Hungarian economy and its structural peculiarities, a great deal of significance is attached to the infrastructure. At the present time such elements of it as communications, science and education are the areas whose development will contribute in all ways to the most rapid increase in effectiveness as a result of technical development.

The concept of the medium-range plan for scientific research determines the special tasks and the use of state subsidies in precisely those areas of natural and technical sciences to which the main directions for technical development are linked. For example, scientific research in the area of studying materials serves as a basis for the development of material and energy savings and microelectronic technologies as well as the reduction of losses in the production and consumption of energy.

On the basis of these two concepts of the economic policy, taking into account the interconnections that have been revealed and refined during the course of planning of the tasks, the medium-range state plan for scientific research and technical development is drawn up.

Additionally, in order to substantiate the 7th Five-Year National Economic Plan, branch block concepts have been prepared. On the whole and for the various branches they encompass industry, agriculture, construction and the production infrastructure. Taking into account the results of the concept of scientific and technical development, in these we establish the areas which should receive the greatest volumes of material and labor resources. Thus in the block concept developed for industry we are planning optimal ratios between the extraction and processing branches and determining the key areas for structural transformations in machine building and the main directions for accelerated development and also the elimination of unprofitable productions. In these concepts we earmark not only the ways of improving the structure and

technical development of the branches included in the blocks, but also the tasks of associated areas.

The method of block planning makes it possible, in the first place, to single out more clearly the spheres of activity which should be developed at more rapid rates; in the second place, to determine the branches where the so-called strategy of uniform development should be implemented and, in the third place, to earmark the kinds of activity where it is expedient to simply maintain the level that has been achieved. This comprehensive approach to the branches, subbranches and most important kinds of activity is the best means of harmonious development.

In the course of the development of the medium-term national economic plan programs are also drawn up for solving the most important problems involved in economic development, which are closely coordinated with all the other elements of the system of goals and means of the national economic plan. Two types of these programs are used in Hungary. The tasks of technical development and transformation of the production structure, which encompass an entire number of production branches and a broad sphere of public life, are reflected in the central programs for economic development. The main processes for improving production which can be carried out within the framework of a single branch are formulated in the so-called programs of action.

The central program for economic development is the totality of measures whose successful implementation presupposes concentrated utilization of material and spiritual resources of the national economy, goal-directed regulation of participation in international division of labor, and the organizing, coordinating activities of centralized economic management.

One of these programs which is directed toward acceleration of extensive modernization of production is the program for socioeconomic introduction of electronics in the forthcoming period. The program reveals those changes which should take place in connection with the utilization of electronic means and methods in various areas of public and economic life (in improving industrial products, managing production processes, processing economic and other kinds of information, the sphere of management of the society and in the awareness of social processes). As a result of the fulfillment of this program the utilization of microelectronics should become an organic part of socioeconomic activity. An important aspect of the program is the training of the younger generation and specialists who are already working for multifaceted assimilation of electronic equipment.

A second central program in economic development is the program for further development of the production of medicinal items, means of plant protection and semimanufactured products for them. The development of this program is conditioned both by the production traditions which exist in Hungary and by the high level of scientific research in this area. The goal of the program is to increase the proportion of original preparations, to improve the satisfaction of domestic needs, and also to strengthen and expand our presence in foreign markets.

Another approach to solving problems of economic development entails central programs for economy and modernization. They are directed toward economizing on raw materials, processed materials and energy, on more efficient consumption of these, and on salvaging byproducts and wastes mainly through the development of production technologies. During the course of their development the specialists have carefully analyzed measures for economy and technical development which could produce the greatest economic effect, and they have determined the capital investments necessary for the conditions for motivating their sales, and also the results expected from the implementation of individual measures directly in the enterprises and in the national economy as a whole.

These programs are an important means of substantiating planned calculations for material and energy consumption as well as the level of effectiveness of economic activity. They help the enterprises to plan their development and they serve as a basis for the corresponding organizational and coordinating activity of the state economic management and also for the development of incentive systems.

Programs of action are developed in individual branches of production when measures for the development or expansion of modern and competitive production, earmarked mainly on the initiative of the enterprises, are supported by the central economic management through coordinated organization of work and special-purpose subsidies. These programs are prepared for areas where during the planning period it is necessary to achieve rapid development but the existing domestic experience, level and volume of production capital are inadequate and the enterprises cannot yet determine the directions for dynamic development and structural transformation of production. Such a program was prepared, for example, for the development of production and the dissemination of robot and video equipment as well as in the area of research on biotechnologies and their extensive introduction.

This far from complete list of programs shows that in planning we use various leading methods for introducing scientific and technical progress into the economy. For example, the introduction of electronics for control of production processes and the items that are produced constitutes one of the most successful means of reducing the proportional material and energy consumption. The programs of action for assimilating robot and video equipment are determined by those groups of items in which the application of electronics is the basis. Here future positive socioeconomic effects are expected from the utilization of these modern items.

The peculiarity of our programs consists in that they determine the directions for development and the nature of the means of the state management mechanism that contribute to it. But the work on these programs does not end with the establishment of the National Economic Plan and the adoption of program documents. Individual programs in the planning period can be augmented by effective measures related to the expansion of their main goals. The conditions for the fulfillment of the programs are directed toward enlisting the largest possible number of enterprises in their implementation. If the programs are of an implied nature the range of enterprises is especially broad.

The fulfillment of the programs should also be supported by means that are inherent in the nature of the system of economic management as a whole and the creation of interest on the part of the enterprises as well as the appropriate organization of the economic activity by the state. The last element includes informing the enterprises of the goals of the program and of the carefully prepared concrete measures for its fulfillment as well as credit and state subsidies that are granted to the enterprises for development and the tax policy.

There is a mutual exchange of information between foreign planning agencies and enterprises in the realization of central programs for economic development. This is carried out with the direct participation of the most involved enterprises. The proposals and the initiative of the enterprises which are linked to the overall goals of the program are reflected in the programs or in the planning documents that substantiate them.

All of the preparatory materials (like the corresponding information) and the approved programs are placed at the disposal of the enterprises. On the basis of these they determine the economic measures and steps to be taken for development which, if they are carried out, allows them to count on various state subsidies, and they find out which measures are being taken in other areas of the national economy to stimulate the development of cooperative ties among the corresponding enterprises.

The Link Between National Economic Planning and Planning of the Enterprises

In order to accelerate scientific and technical progress it is necessary to do more than simply develop the corresponding programs during the course of national economic planning. There must be an economic mechanism which, through collective and individual motivation and economic levers, stimulates and even forces the enterprises to carry out technical development.

A prerequisite not only for constant growth of the overall technical culture of the national economy, but also for effective achievement of individual, especially important goals of development supported by the state through the adoption of various measures is the motivation of the enterprises to achieve technical development which is constantly adapting to the demands of the market, a practice which is becoming strongly established throughout the entire policy for economic activity in Hungary.

This is precisely why the Hungarian economic policy, setting a goal according to which in the future period intensive factors of development will assume a decisive nature, considers the point of departure to be an essential strengthening of the stimuli for effective management and technical development of the enterprises. Such is the path to further development of the entire system of economic management and transformation of economic conditions for the activity of the enterprises. At the present time we are in the intermediate stage of this process, and it will be developing.

We intend to consolidate this process by expanding competition among enterprises, for which we have already begun to transform the organizational

system of the enterprises which is excessively centralized for the conditions of the Hungarian economy.

A large number of the economic organizations can independently create funds for technical development in the amounts they determine and these will not be taxed and will be taken into account under the item of expenditures. Mandatory creation of funds on the basis of centrally established norms pertains not only to science-intensive machine-building and chemical enterprises under ministry jurisdiction where these norms are the minimal amount, but by a decision of the enterprises they can be increased.

If this fund, regardless of the policy for creating it, does not cover expenditures on technical development or the enterprise decides that it will not reflect the proportion of expenditures on technical development in the prices of its items, the actual outlays can be financed under the item of expenditures.

For expenditures on technical development there is no mandatory prescribed upper boundary (limit). The amount of this sum can always be established depending on profitability.

We are striving to arrange things so that consumer evaluation of products has an ever stronger influence on the position of an enterprise and its achievements. To do this we suggest creating legal and organizational conditions whereby the funds of the enterprise which do not contribute to modern requirements of management are transferred to the hands of enterprises that are operating more effectively.

This approach confirms that one of the elementary conditions for the advancement of technical development is improvement of economic mobility and the constant transforming capability of the economy. This is why we are striving to make sure that in addition to the present legal norms and possibilities of transferring financial funds of banks and enterprises, an influence will also be exerted by stimuli which increase the motivation to release funds of enterprises whose activity is ineffective and use them for promising kinds of activity.

Credit is an effective stimulus for improving production in all of those cases when measures for development are effective in and of themselves and their implementation serves the interest of the enterprises. Credit thus augments the internal resources of the enterprise. In those cases when the effect of a particular measure is materialized partially in other areas of the national economy as well, the funds granted from state resources and/or tax benefits can become for the enterprises a means of increasing their interest in modernization and an incentive to carry it out.

State management of the national economy is also faced with the task of applying other, more effective forms of credit and financial subsidies. Since in future improvement of the economy capital investments will remain at their present level, which is much lower than what has become customary in the past decade, economic management should be directed toward making sure that all activity of the enterprises for development serves as much as possible to

fulfill qualitative indicators of the plan and the goals of technical development. Therefore in the practice of financing the basic requirement for obtaining bank credit is that in the production created with the funds for capital investments of the enterprises and the corresponding subsidies, materials and energy are utilized economically and effectively, products are produced which can compete on the foreign markets, requirements for environmental protection are met, and so forth.

The priorities of the plan are also reflected in the fact that credit and subsidies are granted to the enterprises mainly for comprehensively meeting the requirements of the national economic plan. This practice of granting subsidies through its good example and the results that are achieved exert the positive influence on the technical and economic substantiation of capital investments which come strictly from the financial resources of the enterprise. Those conditions are gradually created for unified financing of the innovation process. To accomplish this in past years so-called innovation financial organizations have been created. Their initial capital was formed from a certain proportion of the financial funds of large banks which finance enterprises and state capital investments, and partially through regrouping of a certain proportion of the financial funds of the state that have been allotted for subsidies for technical development.

These financial agencies, with a higher risk, grant credit for the development of technical innovations, for capital investments to introduce them, and for material expenditures related to the sale of new products and expansion of the market. They also conduct the appropriate consultations and render assistance in the organization of the entire innovation process. At the present time their share of the financing of technical development is still insignificant. They participate mainly in the implementation of small measures. It is suggested that this form of utilization of resources for economic development be further expanded.

The changes that have been made in the tax system of the enterprises in past years and the ones planned for the future will gradually bring the expenditures of live labor at the enterprises closer to the level of public expenditures on the reproduction of the labor force. Thus the enterprises will be more motivated to increase labor productivity as a result of the application of modern technical means, which will increase the degree of savings on live labor in the national economy as a whole.

One of the main issues in stimulating technical development is the establishment of a time horizon for the motivation of the enterprise. Previously there was a predominance of elements of short-term interests. During the course of the development of the Hungarian system of economic management, through the strengthening of stable elements in the regulation of income and rejection in a number of areas of the evaluation of the results in comparison with the base results, and also the considerable weakening of internal limitations on funds left at the disposal of the enterprises, an essential step was taken in expanding the time horizon of motivation. The principal model developed for this envisions a gradual strengthening of the conscientious attitude of the collective toward its enterprise and the

concomitant development of institutional long-term interest in technical development.

Through the transformation of organizational ties between scientific-technical and production organizations we intend to contribute to the introduction of the results of research and development conducted on the initiative of enterprises and the elimination of contradictions of interests which impede their practical utilization.

In past years some of the scientific research and planning institutes as well as other organizations were transformed into several dozen planning technical organizations and consultation enterprises. The norms for internal management of these enterprises correspond to peculiarities of the process of technical development, and the basis of their interest is the possibility of directly participating in the additional profit obtained by the enterprises as a result of the introduction of the scientific and technical results they suggest.

The rules and norms for management in effect in Hungary make it possible through the creation of small enterprises, cooperatives and economic labor societies to introduce technical innovations more extensively. The individual risk in this case is relatively high, but the public risk is insignificant since in order to begin their activity they require considerably less money than is necessary to organize meeting-sized enterprises. Moreover in the event that they are unprofitable they are easily abolished. But if the results of their activity have gained recognition from the consumers, these small enterprises can also develop.

The main element in the system of scientific and technical progress is the so-called human factor, which characterizes the level of general education, professional knowledge, culture of labor, discipline, a constant desire to improve and update production, and ability to adapt to changes taking place.

The cause of scientific and technical progress is served by the creation of a system of general and specialized training and education. Here it should be noted that a stronger disclosure of the spiritual and intellectual capabilities of man also requires more effective interest in achieving high results and regularly updating production.

We are striving to achieve a higher degree of material and moral recognition of creative activity. But one can say with confidence that such a political approach in reality can be embodied only when the desire for constant technical development becomes the primary requirement of the enterprise.

The means and methods of national economic planning and economic management which are called upon to accelerate scientific and technical progress are constantly being improved. We are striving to take into account our own mistakes and our own successes and to borrow the results of international experience in keeping with the peculiarities of our system of economic management. We are very interested in the experience of the CEMA countries whose efforts and desires are directed toward reaching our common goals, and we are ready to share our experience with them.

SRV Program

Moscow EKONOMICHESKOYE SOTRUDNICHESTVO STRAN-CHLENOV SEV in Russian No 11, Nov 85 pp 29-32

[Article by Professor Le Kvi An, deputy chairman of the SRV State Committee for Science and Technology: "Scientific and Technical Progress in the SRV: Planning, Management and Cooperation"]

[Text] The Communist Party of Vietnam considers science and technology to be a most important motive force in the matter of transforming small production which prevails in the economy of the SRV into a large-scale socialist economy. At the 4th (1976) and 5th (1982) congresses of the SRV a course was earmarked toward the accomplishment of three interconnected revolutions: in the area of production relations, cultural-ideological and scientific-technical. And primary attention is being devoted to the last. The paths to acceleration of scientific and technical progress (NTP) and improvement of management of these were concretized in Decree No 37 of the Politburo of the CPV Central Committee of 20 April 1981 concerning the SRV policy in the area of science and technology. The main points of the policy that was adopted consist in the following.

1. Science and technology should be closely linked with production and social life. It is necessary to achieve a rapid introduction of the achievements of NTP into production and to transform science and technology into one of the most important factors in the advancement of the national economy.
2. To develop science and technology from all sides, comprehensively and proportionately, concentrating basic efforts on the key areas and on priority scientific and technical programs.
3. To provide for complete interaction between natural, technical and social sciences.
4. To create favorable conditions for successful, accelerated NTP and for the formation and development of the country's scientific and technical potential.
5. To effectively control NTP, improving the existing system of management of the national economy and its subsystem for management of NTP.
6. In always developing domestic scientific potential and relying on the creative forces of the Vietnamese people, it is necessary at the same time to expand international cooperation in this area, primarily with the Soviet Union and other CEMA countries and to devote special attention to interaction with sister states--the Laotian People's Republic and the People's Republic of Cambodia.

Decree No 37 of the Politburo of the CPV Central Committee specifically earmarked the main directions for the development of science and technology of the SRV and the main tasks of the plan for NTP for 1981-1985 and the subsequent period--1986-1990, and also the ways and measures for strengthening the scientific and technical potential and increasing control of NTP.

Mechanization of Planning and Management

Planning and management of NTP, which are of great significance for the development of science and technology, have been continuously improving in recent years. Since 1971 in the SRV state planning assignments have been earmarked for scientific and technical research and for the introduction of the most important scientific and technical achievements into the national economy. The first five-year plan for NTP was developed for 1976-1980.

In order to increase the role of the planning mechanism in the implementation of the country's unified scientific and technical policy and the organic link between plans for the development of science and technology (especially for the introduction and extensive utilization of the achievements of NTP in the national economy) with other constituent sections of the state plan, the SRV Council of Ministers in 1981 approved the provisions on planning in the area of science and technology. In it a great deal of attention is devoted to the application of the target-program approach. The role of planning as a major instrument of management is regulated. The system of plans for NTP includes long-term, five-year and annual plans, and the five-year plans are the main form of planning. The long-range plans for NTP determine the most important directions for the development of science and technology and also the target scientific and technical programs which are of great national economic significance. The five-year plans indicate concrete goals and assignments of NTP for the 5-year period, and the annual plans include detailed and balanced assignments and indicators of NTP for the given year which ensue from the five-year plan and are adjusted according to the results of the fulfillment of the plan for preceding years. The assignments and indicators of the five-year and annual plans for NTP should be included in the national economic plans of all levels of management as organic constituent parts of them. After approval by the corresponding competent management agencies they become directive.

In the SRV plans for NTP are divided into central, provincial and plans of base organizations. The first include statewide and branch indicators. Because of the course of the CPV toward the development of regional industrial complexes and the creation of regions with an industrial-agrarian economy, the provincial plans for NTP are very significant for the national economy of the provinces. The plans for NTP of the base organizations (scientific research institutes and design bureaus, production associations, enterprises and districts), in addition to assignments that come down from above, include their own assignments which are based on the requirements for production and utilization of local resources or economic agreements.

In the plans for NTP at each level of management one should earmark the goals, the final results of scientific and technical activity, the assignments for realizing these results, their influence on production and also the resources allotted for the implementation of the planned measures. Thus the five-year and annual plans for NTP of the SRV should include the plan of assignments, the plan of measures for supporting them and the plan for the introduction of the results.

The plan of assignments consists of the plan for scientific research and experimental design work (NIOKR), the plan for search-prospecting work and study of natural conditions and resources and also their protection, and plans for standardization, improvement of the quality of products that are produced and metrological support for the national economy.

Under the current five-year plan in the SRV the state plan for NIOKR includes about 1,500 assignments (including 1,300 that ensue from state target programs), the branch plans--1,000, and the provincial plans--800 assignments. The number of assignments of the annual plans of the base organizations ranges between 1,500 and 2,000. The annual plan for introduction at the present time contains about 400 assignments, including about 60-80 assignments of the state plan. According to the plan for standardization each year we are to prepare about 500 new standards for all levels. By now the SRV has developed and introduced 4,000 state, 3,000 branch and about 500 regional standards as well as 7,000 standards of enterprises.

The plan of measures to provide for fulfillment of the scientific and technical assignment includes plans for financing, construction and installation work, material and technical supply, international scientific and technical cooperation, scientific and technical information and training of scientific personnel.

The plan for the introduction of results contains technical and economic indicators of the production and output of products that reflect the maximum utilization of progressive achievements in production during a given planning period, which should provide for raising the technical level.

Thus in keeping with the provisions, the content and indicators of the plan for NTP of the SRV for the current five-year plan encompass all objects of management and planning of science and technology. But in practice so far only the plan of assignments is being drawn up, and as for the plan of measures for their support and the plan for the introduction of the results, at the present time organizational and methodological prerequisites are being developed for drawing these up.

The Target-Program Approach

Increasing expediency is one of the most important requirements placed on the system of planning the development of science and technology in the SRV under the current five-year plan. In connection with this it is exceptionally important to apply the target-program approach. Since 1977 the SRV has developed 13 target scientific and technical programs at the state level and about 50 programs at the branch and provisional levels of management, mainly for the development of the country's agriculture.

In 1981-1985 72 target scientific and technical programs were prepared at the state level and about 40 branch and provincial programs were prepared. The state programs for NTP include 1,300 subjects for scientific and technical research and development, more than 280 of which are to be brought to the stage of experimental production and about 300--to introduction into production. About 1,500 scientific and management specialists have been

enlisted for the creation of state programs for NTP during 1981-1985, and about 15,000 scientific workers from 500 organizations and production enterprises are participating in their implementation. In the state programs for NTP during 1981-1985 about 28 percent of the subjects have to do with agriculture, 35 percent--industry, 12.5 percent--construction, transportation and communications, 12.5 percent--comprehensive study of natural resources, conditions and regions, and 12 percent--public health and natural sciences.

Scientific and technical programs are directed toward the following goals: increased productivity of agricultural crops and animal husbandry products; the inclusion of more natural resources in national economic circulation; complete and efficient utilization of processed materials, raw materials and fuel; an increased coefficient of return from production capacities and equipment; the introduction of new kinds of products and a reduction of the corresponding imports.

The target programs for NTP for 1981-1985 were drawn up by expert councils created by the State Committee of the SRV for Science and Technology (GKNT SRV) at the suggestion of branch ministries on the basis of the construction of a "tree of goals" and with methodological assistance from Soviet specialists. On the basis of the "tree of goals" they determine the assignments for NTP which encompass the entire innovation cycle of laboratory research--experimental production--introduction. These three stages are reflected in the corresponding sections of the plans for NTP at all levels of management and thus their assignments have become directive indicators of the state plan.

For successful fulfillment of the state programs for NTP the SRV Council of Ministers approved Decree No 122 (20 July 1982). According to it for each subprogram an administrative agency is created from competent scientific and technical workers of the country, which is under the jurisdiction of the head ministry or department and maintains constant contact with the GKNT. Principles are also determined for target financing and material-technical support for these programs, according to which the resources allotted in the country for NTP should be used primarily for the fulfillment of program assignments.

Actually during 4 years (1981-1984) about half of all the financial funds intended for scientific and technical activity were used for these purposes. The results of the implementation of state programs for NTP during 1981-1983 show that, in spite of significant difficulties, the majority of assignments for the plan for scientific and technical research and development are being fulfilled: During these years more than 200 of them have gone through experimental production and another 200 have been introduced and produced a great economic effect, especially in agriculture. At the same time there has been insufficiently substantiated assignments which were excluded from the plan during the course of the fulfillment of the programs.

It should be noted that the five-year plan for NTP during 1981-1985 was prepared without drawing up national scientific and technical predictions and no information concerning the coordination of national economy plans within the framework of the CEMA was used either. In order to improve quality under

the next five-year plan, since 1983 work has been done for scientific and technical prognostication and the determination of the strategy for the development of science and technology in the SRV up to the year 2000 in 22 directions and areas.

As was noted, the country draws up regional and provincial scientific and technical programs. The regional programs are larger and they are usually intended for in-depth study of natural resources of several provinces which are similar in terms of natural and climatic conditions with the goals of their efficient utilization and the development of productive forces. Plus a program was carried out for studying the northwestern regions of the country and a program is being carried out for studying the regions of the Mekong Delta. The provincial scientific and technical programs, as a rule, are smaller in scale and are aimed at solving intraprovincial problems.

For control of NTP in the SRV a system of agencies was formed which consists of the functional central agency of the Council of Ministers--the GKNT, the scientific and technical administrations of the ministries and departments, and the provincial and city committees for science and technology. These administrations and provincial committees are directly under the jurisdiction of the ministries, departments and corresponding provincial people's committees, and the methodological guidance for them is provided by the GKNT of the SRV.

The mechanism for control of the country's scientific and technical progress includes planning and normative-administrative, organizational and economic levers (incentives, financing and cost accounting).

In recent years the SRV has been conducting a large amount of work to improve the system of planning and control of NTP. We have studied and taken into account the rich experience of the Soviet Union and the other socialist countries. Because of the historical peculiarities of the development of Vietnam this system has only recently become comprehensive and started to function on the basis of socialist principles of management. We also have shortcomings but the results that have been achieved in solving national economic problems show that we are on the right path.

Fraternal Interaction

The development of science and technology in the SRV is closely linked to the assistance and cooperation of the Soviet Union and other sister states. Even in 1956-1961 the SRV concluded a number of bilateral agreements for scientific and technical cooperation with the socialist countries. The period from the 1960's through the 1980's can be characterized as a time of the establishment of the country's scientific and technical potential. While in the past in Vietnam there were practically no scientific and technical personnel with a higher education, now the SRV has about 300,000 of these people, including more than 20,000 who have completed VUZes in sister countries. More than 4,500 people have scholarly degrees and the majority of them have defended dissertations in the USSR and in other countries of the socialist community. A total of about 10,000 Vietnamese specialists have taken advantage of scientific and technical cooperation with the USSR and other CEMA countries in

order to increase their qualifications. Today there are 165 scientific research and experimental design organizations functioning in the SRV, but many of them do not have a good enough material and technical base.

Since the beginning of the 1980's scientific and technical cooperation between the SRV and the socialist countries, while improving, has begun to acquire new features. By this we mean not only an increased number of specialists sent abroad and received in our country, but also expansion of the subject matter. Thus during 1981-1985 scientific and technical ties between the SRV and the USSR encompassed 88 subjects in 22 branches of the national economy. Priority areas were determined for cooperation with other countries of the socialist community as well. Recently we have begun to use new, more progressive forms such as the creation of joint laboratories, temporary collectives of scientists, and so forth.

As we know, the SRV entered the CEMA in 1978 and in June of 1981 Bulgaria, Hungary, the SRV, the GDR, the Republic of Cuba, Mongolia, Poland, the USSR and Czechoslovakia concluded a general agreement for cooperation of the CEMA countries in contributing to accelerated development of science and technology of the SRV during the period up to 1990. The program which is appended to the agreement includes subjects which will contribute to solving crucial problems of the SRV national economy (food, energy and public health). Also earmarked were subjects (medical raw material, comprehensive utilization of bauxite or in the south of the SRV and others) whose completion creates conditions for acceleration of interaction in the next stage. In 1982 Bulgaria, Hungary, the SRV, the GDR, the USSR and Czechoslovakia concluded an agreement for cooperation in assisting the SRV in strengthening geological prospecting work, including prospecting for bauxite deposits.

In defining the problematic for scientific and technical cooperation we tried to link it closely to the tasks of economic cooperation, in so doing providing for more rapid rates of development of science and technology. On the basis of the general agreement in 1981-1985 the SRV concluded bilateral agreements for scientific and technical cooperation with Bulgaria, Hungary, the Republic of Cuba, the USSR and Czechoslovakia. They clearly reflect the line of the general agreement and at the same time they maximally utilized all possible forms of bilateral cooperation, including granting nonreimbursible assistance to the SRV. It should be noted that the combination of multi- and bilateral cooperation is a good form of rendering assistance to our republic.

As a result of the implementation of the decisions of the high-level economic conference large changes are taking place in the national economies of the CEMA countries. The development of a comprehensive program for scientific and technical progress in these countries for 15-20 years marks a turning point in cooperation since it is precisely this concentration on future priority areas of science and technology that can significantly accelerate socioeconomic growth. Here the economically less developed countries will be able to bring their national economies more rapidly up to the level of the European CEMA countries. Vietnamese specialists have actively enlisted in the development of the priority areas of the aforementioned comprehensive program. To this end in our country we are forming national groups of scientists and experts for each of these areas.

Since the SRV has a limited scientific and technical potential we will not be able to participate extensively in the development of a large number of problems. At first the country is concentrating its efforts on that which is primary for us and for which favorable conditions exist which make it possible for us to engage more rapidly in the process of socialist economic integration. The SRV is interested in cooperating in many areas of the development of biotechnology, new materials and technology, the introduction of electronics and so forth. We hope that with the help of the sister countries Vietnam will make a worthy contribution to the strengthening of the scientific and technical potential of our community.

GDR Program

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[Article by Herbert Weiz, deputy chairman of the GDR Council of Ministers, minister for science and technology: "Science and Technology--With Benefit for the Present and Future of the GDR"]

[Text] General Secretary of the Central Committee of the SED Comrade Erich Honecker in his introductory speech at the 9th Plenum of the Central Committee in November 1984 presented the main directions for work on preparing for the 11th Congress of our party, which will be held in April 1986 in Berlin. Thus a clear direction was given to the fulfillment of the 1985 plan and also the drawing up of the national economic plan for 1986 and the next five-year plan.

The tasks that were earmarked were determined to a significant degree by the new stage in the implementation of the economic strategy. Its meaning and content consists in consistently and over the long-range future entering on a path of extensive intensification. In essence we are speaking about utilizing all capabilities of science and technology for the kind of development of the process of updating items and technologies which will make it possible to assimilate more internal sources of economic power and achieve maximum growth of this. The areas of research and the application of its results are determined by the needs of the people, the requirements of the national economy and progress on the path to improvement of the developed socialist society and reliable protection of our achievements. And all this is done for the good of the people.

the development of our republic since the time of the 10th SED Congress convincingly shows that the possibilities of the scientific and technical revolution have become a most important direct reserve for increasing labor productivity and the effectiveness of the national economy. It is confirmed, and this is proved by world practice, that today and the more so, undoubtedly, in the future any serious and profound progress in the development of modern productive forces will find its roots in scientific achievements. Therefore the combination of the advantages of socialism and the achievements of the scientific and technical revolution have been and still is a primary task.

A clear expression of the growing productivity of scientific and technical activity in industry, construction and agriculture as well as in academies of sciences, universities and VUZes are the growth of economic power, the essential increase in effectiveness and the improvement of the quality of public production. Thus the higher level of scientific research and technology and also the better economic utilization of scientific and technical results have contributed significantly to the average annual growth rate (4.6 percent) of the national income for more than one decade almost exclusively as a result of increasing labor productivity. Since 1981 the average annual proportion of consumption of energy bearers, raw materials and processed materials which are important for the national economy decreased by 6 percent. This shows that because of the implementation of the decisions of the Socialist Unified Party of Germany it has been possible to concentrate more and more scientific activity on the satisfaction of the most important national economic needs and on the most important economic processes.

The results of the development and the valuable experience in management and planning of science and technology that are related to this show: it is necessary to reach a high level of scientific and technical work and our own achievements should correspond to international tendencies in development and produce the greatest advantage. Herein lies the key issue in the growth of national economic effectiveness. The GDR cannot be on an average level, emphasized Comrade Erich Honecker in February of this year.

Especially important for dynamic growth of the economy is the national economic effect obtained as a result of a high degree of innovation of the items, processes and technologies that are developed. Therefore when drawing up the plans for 1986 great efforts are being exerted to update the industrial output by an average of 30 percent and consumer goods--40 percent. This is necessary in order to create an effective structure of production and export so that the scientific and technical level of our products will meet the high demands of foreign market and so as to accelerate the process of streamlining the national economy and satisfy the needs of the population for new consumer goods. Rapid rates of updating is the basis for high growth of labor productivity and further increase in output with a simultaneous savings on resources and confident frustration of all attempts at economic espionage on the part of imperialism.

Rapid updating of products and technology should on the whole lead to a marked improvement of the ratios between expenditures and results as a result of constant and higher enrichment. Therefore it is also necessary in the future to increase the productivity of the scientific and technical potential of the combines, academies of sciences and VUZes and to accelerate the concentration of the scientific research and experimental design potential which has already been started in the decisive national economic processes of updating. Of major significance here is the assimilation of the key technologies which determine the development before the beginning of the new millennium, which correspond to our national economy and at the same time have priority significance during the course of social and economic integration.

With the adoption by the party and government of the basic directions and key problems of natural sciences and technology for the period of 1986-1990 and

the longer range feature up to the year 2000 we were given a long-range concept which corresponds to the demands of the national economy. On the basis of the basic directions we are determining the concrete tasks and goals for 1986 and for the next five-year period, which are oriented toward successful continuation of the continuous increase in labor productivity, as has been the case in past years, but, insofar as this is possible, at higher rates.

At the present time as in the future, systematic, constantly expanding application of microelectronics should contribute greatly to increasing the rates and the effectiveness of production. Under the conditions of further world progress in this area we should effectively utilize our capabilities in all spheres of the national economy in order to accelerate the development and the extensive application of microelectronics. In the foreground here is the provision of a powerful element base and its application in final products that can compete on the foreign markets, mainly computer and office equipment, means of communications, automation and control equipment, measurement equipment and scientific instrument building.

The production of high-quality products in the brown coal, chemical and metallurgical branches through enrichment should become an even firmer basis for intensification. Moreover, in keeping with international development we shall first of all engage in such promising areas as technical ceramics, optic electron communications and biotechnology, mainly on the basis of genetic and immune equipment.

As before, most attention is being devoted to the production of energy and its efficient utilization. Although there are certain achievements in this area we must do a great deal in order to study energy-intensive technological processes deeply and in a scientific way. The broad spectrum of assignments includes streamlining the operation of industrial furnaces and also the development of energy-saving light sources and instruments. It is necessary to reach the advanced international level of science and technology in coal extraction, taking into account the increasingly more complicated conditions for working deposits and also effective production of electric energy at traditional electric power stations and to an increasing degree at atomic electric power stations with reliable insurance of nuclear safety and protection from radiation.

We must conduct extensive technological research in order to achieve a higher degree of processing of our crude brown coal as raw material for the chemical industry, for example, through gasification and liquefaction, we must break down petroleum more thoroughly and transform our silicate raw materials, salt and clays into valuable, widely used inorganic chemical products and materials. Significant capacities are being used for the assimilation of a large quantity of materials through enrichment of existing nonferrous metal ores, for example, copper and tin and also other kinds of mineral raw material. The processing and utilization of secondary raw material and industrial wastes are increasingly coming to the fore. Thus we are orienting all of our material base more strongly toward the utilization of domestic raw material.

In order to maintain the rates that have been achieved in reducing the proportional consumption of materials, it is necessary to continue in the future to improve the ratio between the mass and the capacity of items on the basis of expanding the assortment of materials and modern principles of design which better utilize technologically achievable properties. This also includes increased reliability and durability of items as a result of reduction of wear and tear and corrosion as well as the development of new technologies for development and processing.

In order to increase productivity and reduce expenditures, in the staff of the national economy it is necessary first of all to create scientific and technical fundamentals of automated production of parts and assembly in the metal-processing industry. All this places the highest demands on the development of the necessary machines and equipment and also on measurement equipment which is provided with high-quality gauges. It is necessary to think through thoroughly and to assimilate large-scale changes in the process of labor and life which are brought about by the intercoordinated development of microelectronics, computer equipment and also new means and principles of transferring and processing information. Here our socialist activity is a guarantee that these multifaceted elements will be accompanied by constant improvement in the conditions for labor and life.

In order to provide a reliable stockpile for accelerated development of new technological processes and items, including for obtaining special polymers and thin films and crystals with special optical and electronic properties or for increasing the productivity of microorganisms for special purposes it is necessary to have even stronger incentive to create new technical equipment and technology on the basis of an in-depth study of the laws of living and nonliving nature. The assimilation of these technologies and the development of principal decisions for this in the fundamental and applied research are acquiring more and more significance on the path to improving quality and effectiveness.

In order to solve the problems of the present and the future it is extremely significant to maintain scientific and technical cooperation with the Soviet Union and other CEMA countries and to interweave more closely the mental and material potentials of our countries. A reliable basis for this is being created by clear-cut orientation toward intensification and acceleration of scientific and technical progress which was particularly expressed at the June 1984 High-Level Conference of the CEMA Countries in Moscow. The implementation of the decisions that were adopted is contributing to a decisive degree to further deepening and increased effectiveness of scientific-technical and economic cooperation in keeping with the new requirements.

Experience shows that in order to increase the effectiveness of all economic cooperation is becoming more and more important to earmark high goals for scientific research cooperation. In the foreground are the greater requirements placed on the technical level and the quality of items intended for commodity exchange. Machines, equipment and instruments should provide high productivity for each consumer in the sister countries on the basis of the most modern technologies and extensive automation as a result of combined

or joint scientific research work. The requirements for comprehensively economizing on energy and materials and utilizing natural resources efficiently with the maximum possible protection of the environment set for scientific and technical cooperation the task of constantly updating, developing and introducing new processes, technologies and equipment for more thorough processing of raw materials and also, to an increasing degree, the creation of scientific foundations for principally new solutions, including their national economic utilization.

The comprehensive program for scientific and technical progress of the CEMA countries for 15-20 years which is being developed on the basis of the decisions of the High-Level Economic Conference of the CEMA countries contains the most important scientific and technical tasks that are being carried out on the basis of division of labor which is of principal significance for further intensification of the national economy. The GDR will contribute actively to the implementation of this comprehensive program.

In our country the decrees concerning increasing the economic effectiveness of science and technology are directed toward making sure that the combines and enterprises keep up with the growing requirements for productivity throughout the entire cycle of science-technology-production-sales and so that they will react rapidly to the crucial needs that arise.

Even during the planning of tasks for scientific research and development we should clearly determine the economic and scientific-technical goals which are oriented toward the advanced international level and the tendencies in development. Sometimes this is no less complicated than solving the problems is. This is why we attach such great significance to the work with passports for technical and economic commitments. The achievement of the goals requires enthusiasm and creativity both from the researchers and from the people who are responsible for a rapid introduction of the results into the economic circulation of the combine. The underlying prerequisite for obtaining a high national economic effect is and will be an original result of scientific research activities which goes far beyond the framework of the level of knowledge that is known and being used up to now. This requires entering purposively on the path which goes in the opposite direction from imitation and it emphasizes the role of invention.

The development of a new item or technology is being carried out more and more on the basis of a profoundly standardized process of division of labor which presupposes its clear-cut organization and management. Only under these conditions is it possible, on the one hand, to provide for creative research and flexible reaction to the needs of the consumers and, on the other, to achieve a maximum savings of time before the introduction of the results into production. This also brings about an essential increase in the productivity of design and technological preparation of production, for example, through planning using computer equipment and designing on displays that use computers and data banks. Along with accelerated development of the corresponding technical equipment we should also create the necessary software at a high level and in a form that is convenient for youth.

In principle all of these tasks at the same time are determined by the problems of management and planning of science and technology in our country. The leadership of the SED and the government of the GDR are constantly devoting the greatest amount of attention to them, orienting the ideological and political work of the party organizations and managers toward this.

Practice repeatedly confirms that the final results depend to a significant degree on the awareness, knowledge, ability, creative activity and collective interactions of researchers, engineers and innovators. All the work of scientific researchers and developers each day and to an increasing degree should be determined by an awareness of the fact that the leading achievements of the scientific and technical intelligentsia are their most effective contribution to the further implementation of our social strategy.

Experience has also shown that the decree concerning coordination of planning and cost accounting in the area of science and technology is an effective instrument both for accelerating scientific and technical progress at the combines and for increasing the incentives for each worker to achieve high results. Direct coordination of the incentives for creativity with the tasks that is being carried out has proved to be especially good; this corresponds best to the socialist principle for payment for labor.

Of great significance is an awareness of the fact that knowledge is always linked to a particular amount of time which is necessary to increase the readiness for permanent training, to increase skills, and frequently to gain new qualifications. Not only production, but also and equally scientific research, development, design and technology are undergoing ever-greater changes. This is an objective process. The progress of productive forces affects more and more deeply the direct scientific research activity. In particular, from this standpoint numerous scientific and technical initiatives of youth serve as an expression of their high social awareness and their confidence in the future. This is clearly shown by the exhibits of scientific and technical creativity of youth, the competitions of young inventors, the youth projects which are included in the state plan for science and technology, and the works of collectives of young researchers, for example on their central project, "Industrial Robots," and also on the most important issues related to the utilization of domestic raw materials.

One can approach the solution to the sharply increasing assignments for scientific and technical progress in the GDR with optimism. More than 1.5 million graduates with higher and secondary specialized education are employed in the national economy; the initiative of millions of innovators--workers, engineers and scientists--will produce significant results. Because of the far-sighted policy of the SED, the GDR has good prerequisites for further successful advancement in science and technology in close cooperation with the Soviet Union and other CEMA countries so that, in the interests of strengthening socialism, they will continue in the future to have the upper hand in international competition in this area.

Polish Program

Moscow EKONOMICHESKOYE SOTRUDNICHESTVO STRAN-CHLENOV SEV in Russian No 11, Nov 85 pp 39-42

[Article by Edward Lukosz, deputy chairman of the Planning Committee under the Polish Council of Ministers, deputy chairman of the Committee for Science and Technical Progress under the Polish Council of Ministers: "Scientific and Technical Progress in Poland: Improvement of Planning and Management, Strengthening of Cooperation"]

[Text] Nowadays in socioeconomic development science and technology are acquiring ever greater significance and their achievements are being utilized more and more extensively in economic practice. Under the conditions of the keen international economic competition, the growth of effectiveness of public production is achieved primarily through rapid introduction of new scientific and technical solutions.

The penetration of science into all stages of the production process is the main feature of the modern stage of the development of productive forces. As a result of the deepening of integration in the chain "Science--Technology--Production," the work methods used in technology and the implements of labor are changing decisively.

Along with the improvement of production the system of management of the economy should also change. There is a close connection between the level of development of technical equipment and the organizational structure of the management of production. This is precisely why the structures and methods of management of enterprises and organizational departments must change within the framework of the entire state and even on an international scale.

The undoubted dependency of the dynamics of socioeconomic development on the degree of introduction of new scientific and technical ideas, the large capital investments in science and technology and the increased number of people employed in this sphere lead to a situation where in all countries the problem of effectiveness of research and its utilization is at the center of attention.

For effective management of scientific and technical progress it is necessary to have constant improvement of system solutions and a comprehensive state policy in the development of science and technology. The goals of socioeconomic growth, including scientific and technical progress, can be achieved only on the basis of long-range programs and plans.

For balanced, dynamic development of the sister countries it is immensely significant to have mutual coordination of programs for development and close cooperation in their implementation within the framework of the CEMA. This cooperation plays a large role since at the present time economic growth and above all scientific and technical progress are the subject of a keen political confrontation which is being brought about by certain capitalist states against the CEMA countries. The more aggressive imperialist circles consider their attempts to close off access to world technologies, especially

the latest ones, to be the most effective means of weakening socialism. Therefore only joint efforts and coordinated activity directed toward solving complicated problems can be the decisive response to this summons.

For a number of years Poland has been a clear example of this keen political struggle in which economics, science and technical progress have become such an important weapon. Today when beginning to define the directions for development in the near future and earmarking the tasks for 1986-1990 we must take into account the difficult socioeconomic conditions in which we will have to fulfill the national economic plan. The possibilities of the Polish economy in the next 5 years will be influenced by certain consequences of the policy of the 1970s and the difficulties of 1980-1981, and also the economic restrictions imposed by a number of capitalist states.

National economic development during 1986-1990 is limited primarily by quantitative factors. The growth of the population of working age will be the lowest in the history of Poland and the increase in the deliveries of energy, raw material and processed material will not be great.

The factors that will strongly affect the fulfillment of the five-year plan will be indebtedness and the need to pay it off. Under the existing circumstances it is possible to single out the following main directions for the Polish economic policy:

- updating and modernization of production capacities;
- acceleration of scientific and technical progress;
- increased export capabilities for the national economy;
- stronger structural transformations;
- more effective utilization of the production potential.

In following these directions an important role will be played by further deepening of socialist integration. In the development of relations between Poland and foreign countries cooperation with the USSR and other CEMA countries will be of basic significance.

Management of Technical Progress: Goals, Results, Possibilities

In order to provide for an effective socioeconomic policy it is necessary to improve the system of functioning of the national economy. The main thing here will be a greater role and results from central planning and also the strengthening of economic mechanisms and instruments. Here one of the most important issues is improvement of management of scientific research and technical progress. This was the main prerequisite for the creation in December 1984 of the Committee for Questions of Science and Technical Progress. It includes eminent representatives of science--members of the Polish Academy of Sciences, VUZ professors, scientific associates of departmental institutes, directors of well-known production enterprises and also representatives of the PORP Central Committee as well as members of the

government--ministers and leaders of the main economic department. The executive agency is the administration of scientific and technical progress and introductions which is headed by a member of the council of ministers.

Among the major tasks of the committee are: the determination of the prerequisites for the state's scientific and technical policy; the determination of the main directions of scientific and technical progress in keeping with the goals of the plan for scientific and technical development; the development of its own proposals and an evaluation of the proposed most important areas and volumes for fundamental research.

In practice the committee and its executive agency determine the principles for the creation and implementation of central programs for the development of science and technology which are of fundamental significance for socioeconomic growth and also they establish the directions for the development of the material and technical potential of the research base. These agencies develop the principles for financing the development of science and technology and dispose of funds for financing central programs, government orders, departmental research plans and general technical activity.

The committee prepares proposals concerning international scientific and technical cooperation and coordinates and evaluates its results. Basic attention is devoted to cooperation within the framework of the CEMA.

The fulfillment of state assignments in the area of science and technical progress is the basis for the development of the country's economy during 1986-1990 and also the long-range future, especially in the area of reducing energy-and material-intensive national income.

Among the strategic goals of the development of science and technology envisioned by the plan for the country's socioeconomic development during 1986-1990 one can include:

encouraging measures directed toward increasing economic activity on the scale of the national economy, the branches and individual enterprises;

strengthening structural transformations which encompass all areas of the national economy, taking into account concentration of forces and funds on the areas that correspond to economic needs and scientific and technical possibilities;

conducting research which contributes to technical, biological and economic progress; measures in the area of culture and public awareness;

improving the infrastructure of fundamental and applied research and also methods of introducing its results through scientifically substantiated personnel, organizational, technical and economic support for the scientific research base;

expansion of international cooperation with the goal of developing and disseminating joint scientific and technical achievements in order to increase

the effectiveness of their introduction on an international scale as well, especially in the CEMA countries.

The earmarked strategy for management of scientific and technical progress requires, in particular, changes in the existing systems and methods of programming and planning. We are speaking mainly about the kind of improvement of methods for fulfilling programs for scientific research and their introduction which accelerate the necessary increase in the effectiveness of production.

Successful creation of the prerequisites necessary for this depends on coordination understood in the broad sense of the word which includes planning of programs, control of their implementation, adjustment of activity and questions of introduction and application of the results.

Central management of the development of science and technology requires the simultaneous utilization of two methods. The first of them consists in direct influence on certain priority areas of scientific and technical progress through centralized planning programs with centralized provision of means for implementing them. The second method involved indirect influence, that is, the creation with the help of the financial and economic system and parametric mechanisms of conditions that contribute to technical progress at enterprises and in combines.

At the basis of the development of the plan for scientific and technical progress during 1986-1990 are central and departmental target programs for research and also governmental orders concerning the introduction of its results. Centralized programs are directed toward the fulfillment of comprehensive, fundamental and applied research which helps in the achievement of the major goals and tasks that ensue from long-range and future national economic plans.

The system of government orders as the primary goal of effective introduction of scientific and technical achievements into production. This means realizing the results of simple programs. Thus the system stimulates the creation of conditions and guarantees that the work of scientists, engineers and technicians will be utilized in production practice and will contribute to the main goals of the development of the national economy.

The departmental programs are directed toward the fulfillment of urgent scientific research assignments of a branch nature.

The Course of Cooperation

In working in the areas for the scientific and technical progress of Poland a special place was occupied by cooperation with the USSR and other socialist countries. The content and forms of this cooperation are predetermined by a number of documents and above all the long-term program for the development of economic and scientific-technical cooperation between Poland and the USSR during the period up to the year 2000, which was signed by high-level leaders of the USSR and Poland during their meeting in May 1984. We attach great significance to the fulfillment of the long-term Polish-Soviet comprehensive

program for scientific and technical cooperation up to the year 2000 which was signed in September 1985. In adopting the long-term program signed in May 1984 Poland and the USSR were guided by the goals of socioeconomic progress and increased well-being of the workers and, taking into account the economic and scientific-technical potential of the two countries and also the successful interaction in these areas, special importance was attached to planned expansion of mutually advantageous, all-round cooperation on a stable contractual basis. Utilizing the advantages of international socialist division of labor, during the course of the fulfillment of the long-term program Poland and the USSR will strive to increase the effectiveness of production, to accelerate scientific and technical progress, to improve planning and management of the national economy and socialist organization of labor, and further deepen the economic integration of the CEMA countries.

The long-term Polish-Soviet comprehensive program for scientific and technical cooperation up to the year 2000 which was signed in September 1985 is a new international long-term planning document which creates a basis for determining the strategic goals of scientific and technical cooperation between Poland and the USSR and also a basis for the development of a coordinated and in certain cases even a unified policy for the two countries in science and technology.

The Long-Term Polish-Soviet Comprehensive Program for Scientific and Technical Cooperation Up to the Year 2000

The goal of this program is accelerated solution through joint efforts of the most important problems of scientific and technical progress and the introduction into production of the results of cooperation on the basis of principles of mutual advantage. These effects are directed toward the achievement of final results that are related to the goals of socioeconomic development of Poland and the USSR. Here we are guided by the decisions of the High-Level Economic Conference of the CEMA Countries and also the assignments that ensue from the long-term program for the development of economic and scientific-technical cooperation between Poland and the USSR during the period up to the year 2000.

The long-term Polish-Soviet comprehensive program for scientific and technical cooperation up to the year 2000 will be one of the bases for development of bilateral five-year plans for scientific and technical cooperation.

We have envisioned joint activity of specialists from Poland and the USSR in selected areas of science and technology and in branches of production, with an indication of the concrete assignments and time periods for carrying them out, and also the provision of the corresponding material and financial funds for these assignments.

The program spans the period up to the year 2000 and its basic goals and assignments will be updated every 5 years taking into account the results that have been achieved in socioeconomic and scientific-technical progress and the new tendencies in world science, technology and production. Before the coordination of the five-year plans it will be possible to introduce into the long-term comprehensive program the corresponding changes and additions,

having first discussed them at the regular meeting of the intergovernmental Polish-Soviet commissions.

The program is directed toward the achievement of the following main goals:

more rapid development of research and technical development is the priority areas of cooperation which create a basis for raising the technical level and increasing the effectiveness of production in Poland and the USSR;

accelerated introduction through joint efforts of the two parties of advanced achievements of science and technology and, on the basis of this, changes in the structure of production of the most important branches of the national economy;

increased ability of the reciprocally delivered items to compete on the world market and an alleviation of the dependency on capitalist countries.

Taking into account the basic direction of this program and the work related to the preparation of the draft of the comprehensive program for the scientific and technical progress of the CEMA countries for 15-20 years, it is especially important to concentrate joint efforts on the following priority areas of scientific and technical progress:

the introduction of electronics into the national economy which in the future should lead to extensive application of computer and microprocessor equipment in the most important branches of the national economies of Poland and the USSR in order to increase labor productivity and accelerate scientific and technical progress;

comprehensive automation of production, including the introduction of flexible automated systems that provide for rapid updating of production and its changeover to new manufacturing technologies which contribute to the satisfaction of the rapidly changing socioeconomic demands, to optimal utilization of capacities and to a reduction of production expenditures;

development of nuclear energy and more complete satisfaction of the needs for fuel and energy through the construction of AES's, ATET's and AST's for purposes of producing electric and thermal energy; increased extraction of coal and the introduction of effective methods of processing it into liquid fuel and gas; the creation of new technologies for obtaining products from the processing of petroleum, gas and coal; a change in the structure of the fuel and energy balance, mainly by eliminating organic fuel from it;

the development of new kinds of materials and technologies, above all new methods of casting, powder metallurgy, plasma and electron-radioactive processes, laser technology, new design materials, including those based on ceramics, and so forth, which are directed toward effective utilization of raw materials, a reduction of the energy- and material-intensiveness of production and increased labor productivity;

the development of machines building and especially a number of qualitatively new branches of it which technically update production processes on the basis

of advanced scientific and technical achievements which comprehensively deepen specialization and cooperation of production and improve the structure in a number of branches, including transportation;

the development of biotechnology and branches of the agroindustrial complex, which is directed toward providing animal husbandry with highly productive feeds, the creation of biological means of fighting against pests of agricultural crops, increased yields of crops and increased productivity of animal husbandry; the development on the basis of this of highly effective technologies for increasing the output of the main food products (meat, milk, fats, fruits and vegetables); the supply of food producers with highly productive machines that provide for waste-free processing of agricultural raw material and the production of effective medicinal preparations for public health needs;

growth of the output of modern highly effective consumer goods, which presupposes expansion of cooperation in Poland and the USSR of assimilation of industrial production of machines, equipment and materials for branches that produce these items.

Improvement of forms, methods and legal foundations for cooperation.

For intensification of joint scientific and technical research at the level of government we have coordinated a number of important organizational provisions.

the creation of joint scientific and scientific research institutions;

the organization of joint research collectives to carry out scientific-technical assignments;

the development of coordinated plans for scientific research, which are recognized as especially important for both countries;

direct cooperation between scientific institutions, for example, between departmental institutes of the USSR and Poland and also institutes of the academies of sciences of the two countries;

labor placement of representatives of the other country in scientific institutions under equivalent conditions which provide for creative labor.

In the process of increasing the effectiveness of scientific and technical cooperation a large role is to be played by strengthening the ties between scientific institutions of Poland and the USSR which carry out joint research. Scientific research institutes, centers for research and development and other organizations of the two countries are cooperating directly. More favorable conditions are created for them and therefore they will be able to carry out research work more quickly and with greater results in close connection with the enterprises in which the results will be introduced.

The Long-Term Polish-Soviet Comprehensive Program for Scientific and Technical Cooperation Up to the Year 2000 is an example of ever-closer fraternal ties

between Poland and the USSR. Similar long-term programs for interaction with other CEMA countries are in the stage of intensive preparation.

Special significance will be attached to mutual coordination of the main directions of the scientific and technical policy and strengthening of direct cooperation among departments, institutes, central planning agencies and coordinating agencies for the development of science and technology. Stable long-term areas of interaction are being formed, including scientific and technical ones, between Poland and other CEMA countries. Preparations are becoming more active and joint programs, coordinated plans for multilateral integration measures of the CEMA countries and the practice of concluding multilateral agreements within the framework of the CEMA are being realized. The coordinated issues included in these programs as well as the plans and agreements will be reflected in measures for bilateral cooperation and in plans for the development of science and technology in Poland and other fraternal countries. Economic and organizational conditions will be created for further agreement and coordination of plans for science and technology as well as the development of direct ties among scientific institutions of the cooperating countries.

In work projects related to the creation and introduction of new technical equipment, technologies and materials measures should be envisioned for unification and standardization of the items that are produced which correspond to the highest world technical level, as well as for more effective utilization of scientific and technical experience and coordination of sales and purchases of documents and licenses.

The integration of the CEMA countries is a factor which contributes to rapid scientific and technical progress and its high effectiveness with the observance of the conditions of comprehensiveness of research within the framework of the socialist community and simultaneous specialization of individual countries in selected areas.

The coordinated scientific and technical policy is the highest form of ties in international socialist integration. It is reflected in joint planning of scientific and technical research and its effective introduction on the basis of specialization and cooperation of production.

The coordinated scientific and technical policy creates the possibility of effective formation of mutually augmenting structures for science and technology in the CEMA countries, it leads to effective utilization of their scientific and technical potentials, and it contributes to a favorable solution to the complicated problems of development which we face in the 21st century.

USSR Program

Moscow EKONOMICHESKOYE SOTRUDNICHESTVO STRAN-CHLENOV SEV in Russian No 11, Nov 85 pp 43-47

[Article by Genrikh Stroganov, deputy chairman of the USSR Gosplan: "An Important Factor in Accelerating Scientific and Technical Progress"]

[Text] At the conference of the CPSU Central Committee regarding questions of accelerating scientific and technical progress (11-12 June 1985) it was noted that in carrying out the scientific and technical revolution and reequipping the branches of the national economy the major, key role belongs to machine building. Under the 12th Five-Year Plan it will be necessary to increase the rates of its growth 1.5-2-fold. Here it is necessary to arrange for mass manufacture of new generations of technical equipment that is capable of providing a multifold increase in labor productivity, opening up the path to automation of all stages of the production process and changing over to batch delivery of equipment. The catalyst for progress in machine building and throughout the entire national economy in the modern stage is composed of microelectronics, computer equipment and instrument building as well as the entire information industry. These are the ones that require accelerated development.

An important role in solving the key problems in the acceleration of the changeover of the economy to the path of intensive development and increasing the rates of economic growth as well as in the deep reconstruction and technical reequipping of the branches on the basis of the utilization of the latest achievements of science and technology should be allotted to further development cooperation with the CEMA countries in machine building and increased incentives for industrial enterprises to produce export products.

But machine building is the most dynamic branch of the national economy of the countries of the Soviet community. During 1950-1985 the production of machines and equipment in these countries increased approximately 35-fold with an increase in the overall industrial output of 13-fold. At the present time the CEMA countries account for 25 percent of the world output of machines, and with respect to many kinds of machines they occupy the leading positions in the world.

The volume of commodity turnover of machines, equipment and means of transportation between the USSR and other countries of the community increased from 330 million rubles in 1950 to 20.3 billion rubles in 1983. The Soviet Union has more than 220 agreements and contracts with other fraternal countries concerning specialization and cooperation of production, which encompass more than 15,000 items and type sizes of machine-building products. During the course of their implementation the USSR imports from the CEMA countries some of the petroleum and gas extraction equipment, various kinds of technical equipment for agriculture, means of transportation (mainline passenger, electric locomotives, heat-insulated cars and passenger cars) and also ships which it needs for augmenting the maritime, river and industrial fleet. In turn, the USSR delivers to the fraternal countries highly productive mining and lifting-transport equipment, road construction equipment, tractors, automobile and other machine-building products.

A new impetus in the development of cooperation, and above all in machine building, was provided by the High-Level Economic Conference of the CEMA Countries. The decisions adopted at the congress constitute a new step in the coordination of the economic policy of the socialist countries. They determine the main directions in the strategy for economic development and expansion of economic mutual influence of the sister countries over the long-range period. Participants in the conference consider it of principal

importance to improve the planning foundations for cooperation, and above all coordination of national economic plans as the main instrument for coordinating the economic policy, which should be concentrated on solving priority tasks in the development of the economies of the fraternal countries.

At the present time the coordination of plans and machine building for 1986-1990 and the more distant future is in the final stage. Concrete areas have been agreed upon for joint activity of the fraternal countries in solving the large socioeconomic problems, particularly the solution to the fuel and raw material problem, the fulfillment of the Food Program, the increased production of high-quality consumer goods, and the development of ferrous and nonferrous metallurgy and chemistry. Questions of branch cooperation on a mutually advantageous basis were discussed, and the number of intergovernmental and interdepartmental agreements concerning economic and scientific-technical cooperation in the next 5 years were prepared and signed. Path were coordinated for more effective utilization of the capital investments earmarked for the next 5 years, taking into account the dynamic technical reequipment of production. A number of long-term programs were signed for cooperation between the USSR and countries of the community in the area of science, technology and production up to the year 2000.

Specialization and especially cooperation of production are becoming deeper in most important areas of collaboration. These include joint production of a complex of machines and equipment for working deposits of minerals, the development of agriculture, the food industry and light industry, and the production of equipment for comprehensive processing and preservation of food raw material and other kinds of resources, systems of machines that reduce the application of manual labor in various branches of the economy, means of automation and so forth.

The corresponding measures are being earmarked for raising the technical level and improving the quality of the mutually delivered products and further reducing the technical and economic vulnerability to capitalist countries. Here a significant amount of attention is being devoted to the creation of new machines, equipment and instruments which are able to compete as well as to increasing the volumes of their production.

Work is being to augment and extend into the next 5 years the agreements that are in effect now as well the governmental commissions for economic and scientific-technical cooperation and the CEMA agencies.

The comprehensive program for scientific and technical progress of the CEMA countries for 15-20 years which is to be developed in keeping with the decision reached at the economic conference will contribute to accelerating scientific and technical development. It is called upon to contribute to concentration of resources and large-scale development of cooperation among the countries in such priority areas of science, technology and production as microelectronics, computer equipment instruments, means of comprehensive mechanization and automation of production (including industrial robots, machine tools of the processing center type and flexible production systems),

machines and equipment for atomic energy engineering, and modern materials, technologies and biotechnologies. Preparation of general agreements on the basis of the comprehensive program will make it possible to change over to concrete actions more rapidly and to concentrate resources in the key areas which provide for a radical increase in labor productivity, maximum savings on material and technical resources, and steady growth of the technical level and quality of products.

A primary task for cooperation in machine building will be to contribute to the acceleration of comprehensive mechanization and automation of production, mass manufacture of technical equipment that is capable of producing a multifold increase in labor productivity, and reduction of the application for manual labor in the countries of the socialist community.

At the 40th meeting of the CEMA session (June 1985) a general agreement was signed concerning multilateral cooperation in the development and organization of specialized and cooperation production of flexible production systems for machine building and their extensive introduction into the national economy. The agreement envisions the creation of highly automated systems of equipment for various technological processes in industrial production, transportation and warehousing, systems for automated control and planning, and so forth.

Thus in the USSR under the 12th Five-Year Plan it is intended to sharply increase the rates of introduction of flexible production systems (including fully automated sections, shops and plants) and industrial robots. As a result of increasing labor productivity, economizing on production space, reducing production costs and improving product quality, expenditures on these will be recouped in 2-3 years.

The creation of an international training-methodological and research center for flexible production systems will be of great significance. It will be a support research and training base (like the Combined Institute for Nuclear Research in Dubno). Work is being done to create new designs for machine tools with numerical program control, processing centers, precision machine tools of various technological groups, forge-press machines and other items with built-in microprocessors. The general agreement concerning multilateral cooperation and the organization of specialized and cooperation production of industrial robots is being carried out successfully. In this connection the concept of technical development of robot equipment and the summary primary list of industrial robots and components have been developed. This includes 165 industrial robots, of which 89 are already being produced.

During the course of the fulfillment of the agreement concerning scientific and technical collaboration, specialization and cooperation of production of the main means for mechanization of loading and unloading work and transportation-warehouse work, a list of the most important components of machines and equipment which provide for mechanization and automation of these processes have been prepared. The program for specialization already encompasses the output of 19 kinds of lifting and transportation equipment which include 320 separate items.

An area of sets of machines and equipment for open-pit mining of minerals and the construction of main pipelines we have prepared a draft of an agreement for multilateral international cooperation in the production of heavy dump trucks which includes specialization in the output of 13 types of aggregates and components. Their main technical-economic indicators, preliminary volumes and deadlines for mutual deliveries have been earmarked. They are creating a new tractor with a capacity of 500 horsepower. In the USSR on the basis of this we have prepared and tested models of large bulldozers and pipe-laying machines. Additionally, in the GDR, the USSR and Czechoslovakia they have organized cooperative production of rotary complexes with a productivity of 630 cubic meters per hour and more.

The Soviet Union and Poland have reached an agreement concerning conducting work in Poland for raising the technical level and improving the quality of diesels of the Volya type, excavators, railroad tank cars, equipment for the production of chipboard and fiberboard slabs, batching equipment for shifts, and so forth.

Among the main peculiarities of the modern stage of the interaction among the CEMA countries in machine building is the changeover to the organization of cooperation on the basis of comprehensively solving the most important problems, both branch and interbranch (from scientific research and design developments for the creation of new technical equipment to the organization of its specialized and cooperative production and reciprocal deliveries), and also the changeover from the development of individual types to the creation of systems of machines and equipment on the basis of unified aggregates, components and parts.

A most important form of multilateral scientific-technical and economic cooperation is joint work in priority areas of science and technology. One of these areas is the introduction of electronics into the national economy on the basis of extensive application of computer and microprocessor equipment. This process will lead to serious technical and social changes. With the increased intelligence capabilities of the computers there will be a greater possibility of using them to solve more problems related to the management of objects, processing of information and so forth. In this connection we should discuss especially the implementation of the general agreement concerning multilateral cooperation for the development and extensive utilization of microprocessor equipment in the national economy. The coordination of work for its creation and the manufacture of the basic software are being done by an intergovernmental commission for cooperation among the socialist countries in the area of computer equipment, and for its utilization--by the CEMA Committee for Scientific and Technical Cooperation. Plans have been drawn up for the development of computer equipment and extensive application of microprocessors on the basis of the latest items of the microelectronic element base has been earmarked. The micro- and minicomputers that are being created utilize unified microelectronic element bases, interfaces, command systems and software. They are compatible with the SM computers that are now being produced and the existing peripheral equipment.

The major areas have been earmarked for extensive utilization of micro- and minicomputers, which make it possible to obtain the greatest economic and

social effect. These include mainly automated systems for control of technological processes (in chemistry, metallurgy, the petroleum and gas industry and so forth); systems for control of technological equipment, machine tools, machines, energy installations, electric drives, hydrotechnical objects, industrial robots, energy and line-distribution objects and transportation flow systems (high-voltage electric power transmission lines, gas lines and so forth); systems for organizational management, operational planning and dispatcherization, including systems for work positions of engineering and technical personnel and employees; industrial, scientific and medical control-measurement and diagnostic devices and instruments; equipment and means of communication for processing and transmitting information; devices for a complex of transportation and other machines and equipment; systems, devices and instruments for mass individual application and daily use.

The creation of a unified system of means of switching technical equipment and systems for numerical program control of machine tools and industrial robots in keeping with multilateral and bilateral agreements is also related to further improvement of the microelectronic element base and micro- and minicomputers. An important role here is played by the commodity turnover which is increasing from year to year in microelectronic items, specialized technological equipment, especially pure materials and computer equipment based on microprocessors.

In the production of machines and equipment that provide for efficient utilization and economical expenditure of fuel and energy specialized production encompasses practically all kinds of energy equipment, including equipment for AES's. Development is being done for batching equipment of new large automated energy blocks with capacities of from 220 to 1,000 megawatts, and also equipment for intracyclical gasification of coal as a part of the energy installations with a capacity of 1,000 megawatts.

Accelerated growth of atomic energy is one of the priority areas for the development of the national economies of the fraternal countries. By the beginning of 1985 in the USSR and the other CEMA countries there were AES's in operation with an overall capacity of more than 30 million kilowatts which is a five-fold increase over the 1975 level. In 1984 they produced about 100 billion kilowatt hours or almost 8 percent of all the electric energy produced in countries of the socialist community.

An important role in the development of this branch in the fraternal countries is played by the Soviet Union. It renders all kinds of assistance to them in constructing and operation AES's. With technical assistance from the USSR the other CEMA countries have put into operation 16 energy blocks with an overall capacity of 6,380 megawatts, which is an essential contribution to their fuel and energy balances. In the near future it is intended to accelerate the rates of startup of new AES's, to increase the unit capacities of energy blocks and, as a result, to increase the proportion of energy produced with the help of the peaceful atom as well as to increase the energy potential of the countries of the socialist community.

The number of countries in which AES's are being constructed and will operate is increasing.

Cooperation in this area is carried out on a multilateral basis. As early as 1979 the governments of eight socialist countries (Bulgaria, Hungary, the GDR, Poland, Romania, the USSR, Czechoslovakia and Yugoslavia) signed an agreement for international specialization and cooperation of production and reciprocal deliveries of equipment for atomic electric power stations during the period up to 1990.

The agreement envisions the manufacture of more than 140 kinds of modern technical equipment in the participating countries (more than 350 individual positions of equipment and about 300 type sizes of special fittings) for AES's with reactors having capacities of both 440 and 1,000 megawatts. The participating countries made commitments not only for the organization of the output of certain kinds of items, but also for collective participation in the construction of AES's, the performance of installation and supervisory-installation work, and the provision of spare parts for the equipment. A considerable amount of attention is being devoted to the quality and reliability of the products that are being produced. In the modern stage the main direction for nuclear energy is the output of electric energy. Yet only 25-28 percent of the fuel and energy resources is used for its production while 35-40 percent is used to obtain heat for the industrial and municipal-domestic sectors. This dictates the need to revise the structure of nuclear energy and to search out ways of achieving a greater return for heat supply.

The High-Level Economic Conference of the CEMA Countries adopted a decision to prepare a program for the construction of AES's and AST's for the period up to the year 2000. To this end AST's are already being constructed near the cities of Gorkiy and Voronezh, and near the city of Odessa we have started the construction of a powerful atomic thermal electric central plant on the basis of VVER-1000.

The socialist countries have arranged for large-scale cooperation in the production of equipment for AES's which is unprecedented in international practice. The development of the program for the construction of AES's and AST's during the period up to the year 2000 (with its adoption the interaction of the fraternal countries in atomic energy and atomic machine building will enter a new stage and be given further comprehensive development) demonstrates with new force the indisputable advantages of socialism and the possibilities which it opens up for solving through joint efforts the most complicated problems of scientific and technical progress.

Scientific and technical cooperation in electrical equipment is based on the development and series production of unified series of the most widespread kinds of products. This work is comprehensive in nature throughout the entire cycle of science--technology--production: along with the creation of new kinds of items, when necessary technological processes are improved, highly productive equipment is developed, progressive materials are introduced, and so forth. This makes it possible to produce items of electrical equipment at a high level, which are able to compete, while reducing the consumption of materials and electric energy which are in short supply.

Development has been completed on the unified series of low-voltage asynchronous electric engines with axle rotations of from 45 to 355 millimeters (series AI). In planning these they took into account the results of the optimization calculations for the minimum expenditures on this product in the national economies of the countries participating in Interelektro. In the USSR the assimilation of the production of the new series began in 1983. In terms of the design weight of the engine the AI series is 15-20 percent lighter than the engines of the preceding 4A series, and in terms of the efficiency factor they surpass them by 1-1.5 percent. The changeover to the new series will make it possible annually in the countries participating in Interelektro to save 27,700 tons of electrical steel, 1,800 tons of copper wire, and 68,000 tons of iron. The annual savings of electric energy will amount to 1 billion kilowatt hours.

They have developed a series of general-purpose power distributor transformers with a capacity of up to 1,600 kilovolt amperes and a current of up to 20 (22) kilowatts. The transformers of the new series have a high technical level. The economic effect from their introduction in the USSR in 1984 reached 1.4 million rubles.

Joining the efforts of electrical technicians of Bulgaria, Poland, Romania, the USSR and Czechoslovakia made it possible in a short period of time to practically fully satisfy the growing needs of the machine tools builders for sets of electrical drives. Thus in the Soviet Union more than 100 models of machine tools with numerical program control began to be equipped with new electric transmission drives delivered from Bulgaria, Poland and Czechoslovakia. As a result, the productivity of metal processing increased by 20-30 percent, the reliability of the machine tools increased, and their kinetics were simplified.

Cooperation in this area will be further developed. Interelektro has developed the creation of new unified series of electric drives which, beginning in 1986, will be used not only for metal-cutting machine tools, but also for industrial robots.

A special place in the work of Interelektro is occupied by special technological equipment (STO). We are jointly creating sets of this equipment for the production of electrical fittings and transformers and small-capacity electric engines for light transmission, city telephone and control cables. By now the participating countries have significant capacities for producing a number of kinds of STO's. In Hungary, the GDR and Poland they have developed the production of the main kinds of cable technological equipment. The USSR is increasing capacities for producing STO's for the production of electric machines and transformers. Bulgaria and the USSR are constructing capacities for producing STO's for the assembly of low-voltage equipment and so forth. It is planned to expand the creation of highly productive specialized technological equipment for the manufacture of electrotechnical ceramics, galvanized elements and lighting items.

At the present time we have completed the preparation of the draft of the long-range plan for the work of Interelektro during 1986-1990. It reflects

the measures that are directed toward the implementation of the task of the high-level economic conference. They include a determination of the basic directions for scientific and technical progress in the area of the electrical equipment industry for 15-20 years (including for automation of production on the basis of the utilization of microprocessor equipment and industrial robots) and also measures for the development of power semiconductor equipment, the creation and introduction of electrotechnical equipment for flexible production systems, nontraditional sources of current, lighting communications cables, and so forth.

As for items for general machine-building application, proposals have been prepared for the creation of unified hydraulic cylinders, hydraulic engines and hydraulic equipment for miniature use and pneumatic equipment for use in means of automation, including for machines with numerical program control and industrial robots. The realization of these proposals will increase the reliability of hydraulic and pneumatic systems by 30 percent, will reduce the proportional metal-intensiveness of hydraulic drives by 40 percent and pneumatic drives--by 30 percent, and will reduce their energy-intensiveness by 20 and 25 percent, respectively.

In the CEMA countries for comprehensive mechanization of agricultural production (farming and animal husbandry) joint work is being done to create and manufacture 265 kinds of tractors and agricultural machines. Of these 115 are new and modernized items. About 70 kinds of advanced technical means are also being developed. Additionally, the countries of the community are specializing in the production of more than 600 kinds of machines and equipment for efficient processing of agricultural raw material. About 80 kinds of machines and equipment are being manufactured for the food industry.

Good results are produced by cooperation of international collectives of scientists and specialists. The experience in the functioning of joint Soviet-Czech planning-design and technological bureaus for robot equipment is valuable. On the basis of this we have now created the international scientific and technical association called Robot.

As a result of the successful solution to various priority problems in the countries of the socialist community there has been an essential change in the structure of production and reciprocal deliveries of machine-building products: the proportion of progressive kinds of machines and equipment is increasing.

For coordination of joint efforts in further development of machine building, at the 39th meeting of the CEMA session in October 1984 it was decided to form a CEMA committee for cooperation in the area of machine building. Its activity should contribute to more successful realization of the points of the High-Level Economic Conference and the implementation of a coordinated economic and scientific-technical policy in the area of machine building, involving mutually advantageous cooperation and solutions to large problems in the development of the national economies of the CEMA countries.

An important area for the activity of the committee is the coordination of state plans of the CEMA countries in the area of machine building. Under the

new conditions it is necessary to have a better mechanism for coordinating plans. Based on the coordination of the economic policy, this committee should at the same time delve more deeply into the production sphere of cooperation, including capital investments, and contribute to the development of stable and long-term cooperation on the basis of the organization of direct ties among enterprises of the countries.

The improvement of the forms and methods of coordination presupposes expansion of the "planning horizon" beyond the limits of the five-year period. This was brought about first of all by the decision of the countries to coordinate the economic policy, which opens up the long-term future for deepening economic integration in machine building. Long-range coordination in selected areas of cooperation creates prerequisites for practical maintenance of the continuity of planning of foreign economic ties through refinement of long-term perspectives when the plans are coordinated each year. The committee and its permanent working agencies concentrate special attention on the creation and organization of specialized and cooperation production of the latest machine-building products--flexible production systems, systems for automating design and technological work on the basis of extensive introduction of microprocessors, automatic manipulators with program control (designed on an aggregate-module base) for various branches of the national economy, self-propelled mining equipment for underground work, a set of equipment for the utilization of compressed and liquefied gas as engine fuel, and equipment for waste-free processing of food raw material.

In April 1985 there was a meeting of the CEMA Committee for Cooperation in the Area of Machine Building where they coordinated the draft of the provisions concerning the activity of the committee and its permanent working agencies, which was approved at the 114th meeting of the CEMA executive committee. Additionally, they approved proposals and a list of priority problems for cooperation and earmarked time periods for the development of concrete agreements. The plan for the committee's activity in the next 2 years envisions the preparation of the main directions for cooperation in the area of machine building during 1986-1990 and also long-range programs for the development of multilateral specialization and cooperation of production in the most important kinds of machine-building products up to the year 2000. A general agreement has already been signed for multilateral cooperation in the development and organization of specialized and cooperative production of flexible production systems for machine building. Areas have been earmarked for cooperation in the creation of progressive resource-saving technologies and the organization of joint specialized production of unique heavy machine tools, road machines, equipment for mechanization of agriculture, equipment for construction and chemistry, modern aircraft and helicopters for civil aviation, modern microprocessor items and other equipment.

Combining the efforts of machine builders of the fraternal countries at a new organizational level should contribute to advancing machine building and, on the basis of this, to providing in the final analysis for the solution to the most important problems of the socioeconomic development of the CEMA countries and the strengthening of their technical and economic independence, and thus it should strengthen the positions of socialism in the world.

It is the duty of workers of the machine-building complex of the Soviet Union to do everything necessary for rapidly changing industry over to the intensive path of development. In all sections of the process of scientific and technical creativity (from the origination of an idea to series output of a new product) it is necessary to achieve exemplary performance of concrete deeds and to greet the 27th Congress of the Communist Party of the Soviet Union with new successes.

CSSR Program

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[Article by Ladislav Rzhiga, deputy chairman of the Czech Commission for Technical and Investment Development: "The Development of Science and Technology in Czechoslovakia: Questions of Management"]

[Text] At congresses of communist and workers' parties of countries of the socialist community and meetings of high-level party and state agencies which have been held recently a great deal of attention has been devoted to the process of intensification of economic development which is closely related to scientific and technical progress. General Secretary of the CPSU Central Committee Comrade M. S. Gorbachev noted: "Only an intensive economy which is developing on the latest scientific and technical basis can serve as the reliable material base for improving the well-being of the workers and successfully carrying out the social tasks that face the society."

These tasks are also crucial for the modern development of the Czechoslovakian economy. As general secretary of the Central Committee of the Communist Party of Czechoslovakia, President of the CSSR Comrade G. Gusak stated at the 16th Congress of the CPC, "a decisive factor in intensification of the economy and the most powerful source of growth of the productivity of public labor is science and technical progress. Scientific and technical development is a truly revolutionary task for our entire society. Only by introducing the achievements of science and technology is it possible to develop the most progressive branches, electronics and microelectronics, comprehensive mechanization and automation, to eliminate hard physical labor, to disseminate advanced methods of technology and to improve the management and organization of labor."

Both the 16th Congress of the CPC and the 8th Plenum of the CPC Central Committee (1983), having considered issues of accelerating the introduction of the achievements of science and technology and to practice, pointed out the need for further improvement of management of scientific and technical progress and at the same time of the entire system of planning management of the national economy so that it would have a more effective influence on scientific and technical development. Here the CSSR is building on the experience of other countries of the socialist community in this area, first and foremost the Soviet Union.

At the beginning of the 1980's Czechoslovakia adopted a complex of measures for improvement of the system of planned management of the national economy

which was directed mainly toward the fulfillment of assignments of the 7th Five-Year Plan (1981-1985) and the creation of more favorable conditions for intensification of the economy, taking into account the difficulty of existing and especially anticipated future external and internal conditions for the development of the society. The provisions that were adopted are directed toward increasing the effectiveness of the economy and strengthening its dynamics, which we largely managed to accomplish in the past years of the current five-year plan. At the same CPC Congress Comrade G. Gusak said that the main goal of the complex of measures includes intensification of the national economy, more decisive utilization of the results of the scientific and technical revolution, more effective stimulation of efficient and high-quality work, and the creation of the most favorable conditions for comprehensive creative activity of the people.

With relation to planning as the decisive unit of the economic mechanism as a whole and the main instrument for management, this complex set the task of making it more forward-looking and internally more coordinated. At the same time at the basis they used the five-year plan which relies on the concept of long-term social and economic development. During the course of the 7th Five-Year Plan both the requirements for future planning and the tasks of the Five-Year Plan were gradually fulfilled and at the present time they are being further developed.

A great deal of significance is attached to the preparation of predictions, mainly long-range predictions. The work should be culminated with a consolidated prediction of the scientific-technical, economic and social development of the CSSR for 20 years, which must be modified and continued every 5 years. When drawing this up they take advantage of the experience of the countries of the socialist community, mainly the USSR, and the results of analogous work in the CSSR, which were taken into account in the process of determining the goals of economic and social progress and the development of science and technology. The consolidated prediction singles out five main areas:

development and utilization of science;

strategic interbranch directions for the development of science and technology in the national economy;

basic tendencies in the development of the economy, the application of principles of intensification and the formation of an optimal structure for the Czechoslovakian economy;

tendencies which take into account the patterns of further social development;

particular issues of the specific features of the economic and social development of the Czech socialist republic and the Slovakian Socialist Republic.

The center of the development of predictions is the Czechoslovakian Academy of Sciences; it will do the consolidated prediction in close cooperation with the

CSSR Gosplan, the State Committee for Scientific-Technical and Investment Development and other agencies and organizations.

A great deal of attention will be devoted to the application of the target program approach to the entire system of planning activity. The system includes so-called long-term comprehensive programs whose main goal is, on the basis of long-term predictions in selected areas to provide for important structural changes in the national economy which are related, as a rule, to the development of science and technology and also to analyze and comprehensively take these changes into account in individual five-year plans. Such a long-term program was developed in the CSSR, for example, in the area of efficiency and more economical expenditure of fuel and energy during 1981-1990; in keeping with this program it is intended to save approximately 27 million tons of conventional fuel in practically all areas of the national economy. The tasks set by the program are being carried out successfully.

Of essential significance for the application of the target program approach in the CSSR was the preparation and implementation of long-term target programs for cooperation which were developed within the framework of the CEMA and supported by national economic plans of individual CEMA countries, including the CSSR. Because of this Czechoslovakia drew up state target programs. The goal of these programs is planned support for decisive structural changes in the plans for the development of the national economy, and also science and technology. The programs are constantly being improved. For the 8th Five-Year Plan during 1986-1990 in the CSSR the following state target programs have been earmarked:

The development of the construction of nuclear energy objects up to the year 2000;

Increasing the efficiency of expenditures and utilization of fuel and energy;

Increasing the efficiency of expenditures of metals;

Hydraulic elements and aggregates;

Robotization of technological processes;

Powerful semiconductor transformers and parts;

Improvement of the material and technical base for the introduction of electronics;

Expansion of the sphere of application of electronics in selected sectors of the national economy;

Selected chemical productions;

Progressive transportation systems;

Increased efficiency and modernization of warehousing;

Environmental protection;

More effective utilization of individual kinds of secondary raw materials.

As we can see, practically all of the state target programs are closely linked to scientific and technical progress and the accomplishment of this progress in the national economy. The conditions for fulfilling state target programs have been envisioned by the National Economic Plan and the Plan for the Development of Science and Technology. This provides a closer link between the growth of the economy and the development of science and technology, and thus the prerequisites for making scientific and technical progress the basis for the plans for economic development.

Because of the target program approach planning activity for the development of science and technology has improved; the plan for the development of science and technology has been coordinated with state scientific and technical programs whose goal is concentration of the activity of scientific research institutes and experimental design organizations on the decisive areas of scientific and technical progress. In the 8th Five-Year Plan the following state scientific and technical programs have been earmarked:

extraction and enrichment of individual kinds of fuel;

a higher technical level of metallurgical production;

new metal and nonmetal materials;

progressive technologies in machine building;

new types of engines for automated machines and for use in industry and attachments for these;

selected problems in the development of the agroindustrial complex;

increased effectiveness of the main units of the transportation system, including technical means;

a higher level of communications;

increased effectiveness of above-ground construction;

reconstruction of the textile and sewing industry which involves technology, machine tools and material;

selected biotechnologies, including machines and equipment;

concern for the health of the population;

a state information system for scientific and technical development;

progressive packaging systems;

radio nuclides and atomic instrument equipment;

the development of electronic instrument equipment.

The plans for the development of science and technology in the Czech Socialist Republic and the Slovakian Socialist Republic also include several scientific and technical programs of republic significance in which attention is devoted mainly to geological prospecting, the development of the republic's raw material base and so forth.

At the same time, improvement of planning in the CSSR is directed toward expansion of Czechoslovakia's participation and socialist economic integration and priority fulfillment of tasks and commitments that ensue from agreements for integration and measures of both multilateral and bilateral cooperation. It is necessary for the process of integration to include capital construction as well, for which decisive construction projects should be earmarked and financed first of all. Capital investments should thus be concentrated so that they will contribute to the realization of the results of scientific and technical progress, and also direct them toward modernization and reconstruction of existing fixed capital. Preference will be given to the construction of experimental and production bases at research and experimental design institutes.

As was emphasized at the 8th Plenum of the CPC Central Committee (1983), the course of the implementation of the aforementioned complex shows that up to this point we have not provided for a radical turn toward mobilization and utilization of the decisive factors in intensification of the economy, which consist mainly in more accelerated introduction of the achievements of science and technology and to practice, although a certain amount of progress has been made in the direction of solving this problem. We are speaking about certain measures of an experimental nature in a number of ministries since the beginning of 1984. At the same time the major directions for further development of the complex of measures for improving the system of planned management of the national economy, adopted by the CSSR government in 1984 for the next five-year plan in keeping with the decrees of the 8th Plenum of the CPC Central Committee are directed toward acceleration introduction of the achievements of science and technology and to practice.

The entire system of planned management under the 8th Five-Year Plan should provide for the creation of conditions which will stimulate economic interests and open up a broader space for effective innovations at all levels of management. A decisive factor here is considered to be the increased demands placed on the fulfillment of tasks of the state plan and the more rigid conditions for the enterprises and production-economic associations to receive monetary funds. This also pertains to the realization of the overall concept and the establishment of the unified measure for economic effectiveness in planning processes, the system of material incentives, cost accounting and so forth on the basis of a periodic comparison of the achievements of the CSSR in the area of science and technology with the highest technical and economic level in the world.

It is assumed that as a result of gradually increasing the economic requirements the position of the consumers with respect to the producers will become stronger and the latter will be interested in increasing the effectiveness, quality and technical level of their products; operating reserves will also be created for solving problems of technical development and continuous supply of modern technical equipment, and so forth. These measures will exert an influence on comprehensive interest in accelerated introduction of the achievements of science and technology and to practice.

In the system of plans for all periods and at all levels of management it will be necessary to increase even more the significance of such criteria, indicators and normatives related to them which will comprehensively reflect the positive influence of the introduction of the achievements of science and technology into economic processes. We have in mind first and foremost the conventional net output and profit, technical and economic indicators of products and technologies, the profitability of production capital, material-, energy- and capital-intensiveness, labor productivity, indicators of the effectiveness of exports and normatives for material incentives.

The planning process, which takes into account priority developments, criteria of effectiveness, tasks, limits and normatives, creates extensive possibilities for optimization of the plans, depending on the return from scientific and technical progress and makes it possible to utilize efficiently the limited resources (credit, currency, raw material, energy, labor force and so forth) when selecting profitable objects in capital construction, in technical development and in international division of labor. At the same time the framework is expanding for interaction both of the center and organizations of the economic sphere and of the organizations themselves in order to accelerate the process of improvement of technical equipment.

Taking cost accounting into account and on the basis of the value mechanism it is suggested that the planned needs of the enterprises and production and economic associations be more closely linked to the accumulations obtained through their own efforts, mainly from profit (after deductions into the state budget), and amortization deductions, whose amounts will depend to a considerable degree on innovative activity of these organizations. It is intended to link production activity more closely to foreign trade activity.

It is intended to expand the rights of production and economic associations and enterprises to create and utilize funds, which will make it possible to apply more flexible financing of plans related to the introduction of the achievements of science and technology into practice. The funds for technical development will then be formed on the basis of norms of expenditures. Moreover these funds will be able to be augmented from profit which is left at the disposal of the enterprises and other sources (for example, from the sale of licenses, documentation and so forth). This makes it possible in certain cases to distribute money more effectively among funds for technical development and capital investments. During the 8th Five-Year Plan it is intended to check on the expediency of the combination of these funds in the form of the innovation fund from which we would finance scientific and technical research and capital construction related to it. To a large degree and under mandatory conditions parametric prices will be applied as a

criterion for the effectiveness of products and technology, in which the economic results of science and technology are included.

We shall continue to improve the system of price setting, especially parametric price setting, with the help of which we can regulate the ratios between prices for new products and their consumer quality. Even at the present time in the CSSR we are using several methods of price setting. The dependency of price setting on scientific and technical progress makes it possible to establish beneficial and reduced prices. Beneficial prices are established mainly for products that meet today's technological requirements and for high-quality products. Reduced prices are applied for technically outdated and poor-quality products. The beneficial price remains in effect for the period of the certification which attests to the high technical level of the products (for means of production--a maximum of 3 years, for consumer goods--a maximum of 2 years). Wholesale prices can fluctuate, depending on the increment which is equal to the average annual effect obtained by the consumer of the new product, but they must not exceed 25 percent of the base price. As concerns consumer goods which are also delivered to market supplies where this effect cannot be calculated, the increment is established on the basis of a decision of the state institution. Beneficial prices for products that are of high quality are in effect for a certain period, but no more than 3 years. The minimum price reduction for technically outdated products and poor-quality products can be up to 15 percent of the wholesale price. But if the item is again rated as poor in quality, the difference is doubled, that is, it is equal to 30 percent of the base wholesale price.

In the organizational structure of production, science and research it is permissible to have a flexible differentiation of various forms, including integration of individual enterprises. At the same time the organic link between science and production by means of a number of organizational forms that are known from Soviet experience creates extremely favorable prerequisites for acceleration of the cycle of science--technology--production--utilization. On the basis of this experience the CSSR is creating research-production units and scientific production associations.

In Czechoslovakian practice the research production unit is considered to be the form of organizational and economic connection between organizations engaging in research and development and industrial enterprises which will contribute to acceleration of all phases of scientific and technical progress right down to the production and utilization and provides for comprehensive control of the latest processes and more effective realization of the results of research and development. An example of such a unit in the CSSR is the Research Institute of Mechanization and Automation in Novo-mesto-nad-wagom.

Scientific production associations are a form of temporary or permanent contractual cooperation in carrying out assignments in science and research and development, which contributes to active realization of their results. There are already a number of these associations in operation in the CSSR, and VUZes, research institutes and industrial enterprises are cooperating particularly successfully.

Throughout its existence the CEMA has developed interaction in science and technology in addition to economic cooperation among the countries included in it. The countries have exchanged thousands of sets of documentation, on the basis of which large plants have been constructed. An important role in this was played primarily by the scientific and technical documentation which was turned over by the Soviet Union to the fraternal countries. At the same time tens of thousands of scientists, technical workers and leading workers from individual CEMA countries were given the opportunity to become familiar with each other's scientific and technical achievements and exchange advanced experience.

During the past 15 years scientific and technical cooperation has developed on the basis of the comprehensive program for further deepening and improvement of cooperation and development of socialist economic integration. The CSSR participates actively in the implementation of this program, and the results of the cooperation are producing a significant advantage for our country in the form of economizing on forces for research and development, reducing the time periods for making decisions and, of course, introducing scientific and technical data into practice.

At the high-level conference of the CEMA held in Moscow in June 1984 special significance was attached to scientific and technical progress. Agreement was reached concerning joint development on the basis of national programs of a comprehensive program for scientific and technical progress for 15-20 years. The program is being developed in priority directions such as the application of electronics, the production of means of automation and the introduction of flexible automated systems, the utilization of atomic energy and new kinds of materials and technologies, and the development and application of biotechnology. Imminent scientists, specialists have been enlisted for the development. The CSSR is participating actively in the preparation of this program in individual sections and, presumably, its share of the realization will be from 15 to 20 percent.

The economic conference also devoted a great deal of attention to such a crucial problem as the development of direct ties among enterprises, associations and organizations, including institutions of joint firms, associations and other international organizations that specialize in solving these problems. Czechoslovakia attaches a great deal of significance to this form of cooperation. On the basis of recommendations of the conference in March 1985 an agreement was signed between the USSR Council of Ministers and the government of the CSSR for cooperation in the development of robot equipment complexes and flexible production systems and also the creation of the Czech-Soviet Robot Scientific and Technical Association. The location of the new international association was Preshov in Czechoslovakia.

In keeping with the program for scientific research, experimental design and planning-technological work of the Robot Association, during 1985-1990 Czech-Soviet cooperation will develop in three areas. First--the development of concepts of robotized complexes, flexible production systems and control of them, including unification and standardization, preparation of scientific-technical and economic information and the solution to patent and legal problems. The main direction of the second area is the development of

standard plans for flexible automated systems for the technology of processing and forming, means of operational movement, and flexible production systems for welding, surface processing and automated installation. The third area includes the creation of experimental models and test series of machines, equipment and production series of machines, equipment and production systems developed in the association, including comprehensive deliveries and technical servicing.

This kind of bilateral interaction is based on multilateral cooperation of the fraternal countries in robotization and will develop in keeping with this. The agreement between the USSR and the CSSR is a concrete form of realization of the decisions of the High-Level Economic Conference of the CEMA Countries.

In implementing the program adopted by the CPC and carrying out the decisions of the economic conference we shall continue to improve control of scientific and technical progress, to deepen scientific and technical cooperation with other CEMA countries and to render assistance to the SRV, the Republic of Cuba and the MPR, strengthening socialist cooperation as a whole and increasing its economic significance in the world.

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CHINA/FAR EAST/PACIFIC

U.S. SAID 'ENCOURAGING' CHANGE OF REGIME IN SOUTH KOREA

LD250052 Moscow TASS in English 1737 GMT 24 Mar 86

[Text] Moscow March 24 TASS--TASS political news analyst Askold Biryukov writes:

Haiti and the Philippines, "Baby Doc" and Ferdinand Marcos...Washington is sacrificing its friends and allies, as if pawns in a game of chess, to preserve, if possible, its so-called vital interests in those countries, interests that are threatened by people's protests amounting over many years.

Indeed, the change of power has taken place in Haiti. The monster of cruelty, Duvalier, nurtured by the United States, has been removed from that country. But nearly 200 U.S. corporations operating in Haiti preserved their positions. Nothing, not even the "democracy" that replaced the dictatorship, will prevent them from continuing to plunder the country's wealth.

"Making an about-face, Washington turned away from dictator Ferdinand Marcos, whom it had been supporting under any circumstances for 20 years and whom it glorified quite recently as a 'Champion of democratic principles'," Heinrich Jaenecke writes in the journal STERN. "Dropping him like a hot potato, the United States praised the coup in the Philippines describing it as one of the most heartening examples of a democratic process in contemporary history," the West German journalist writes. Having sacrificed Marcos and thus reassuring the opposition somewhat, the United States managed to preserve a great influence of its monopolies also in the Philippines and, the main thing, to ensure its military presence. For two U.S. bases in the Philippines, Subic Bay and Clark Field, are regarded by Washington as "indispensable" to "neo-globalism" strategy that has been assumed by the present administration.

Now that U.S. placemen in other areas are threatened to be swept out by the people's anger, they in Washington are pondering on versions of "transition to democracy" also in those areas. South Korea, that is the major U.S. bridge head in the Far East, is, apparently, among such countries. The time of power in Seoul of a U.S. puppet, dictator Chon Tu-hwan, is obviously running out. This is shown by protests of the South Korean people against the regime, against the U.S. sway, by demands that U.S. troops be withdrawn.

The well-informed Japanese newspaper NIHON KEIZAI reported that Gaston Sigur, U.S. assistant secretary of state for East Asian and Pacific Affairs, is to go to Seoul on an "emergency mission" one of these days. His task is to "establish actual intentions of President Chon Tu-hwan in the democratisation of the country". There is no need for Sigur to make this trip to establish how things stand with "democratisation" in South Korea. For daily arrests of adversaries of the regime, dispersal of demonstrators with the use of police truncheons, tear gas and plastic bullets, siege of student campuses by police and troops are common knowledge. The essence of the matter is different. The White House has arrived at the conclusion that "dramatic changes" are possible on the Korean Peninsula in the nearest future, the same newspaper sums up. And in order to prevent this, Sigur is instructed to analyse the situation and work out versions of "peaceful transfer of power" to Chon Tu-hwan's successors.

Chief of the Pentagon Caspar Weinberger and U.S. Secretary of State George Shultz plan to visit Seoul after Gaston Sigur, in April and May. The newspaper NIHON KEIZAI reports that the United States intends to speed up the reinforcement of South Korea's military potential so that nothing unexpected should happen. And the United States not only intend to do so. It is doing precisely this every day.

With the onset of spring, the opposition forces in South Korea are stepping up the campaign of protest against Chon Tu-hwan's dictatorship. It looks like the early spring in that country will give way to a hot summer.

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MIDDLE EAST/NORTH AFRICA/SOUTH ASIA

DRA CONSTITUTIONAL COMMISSION HOLDS FIRST SESSION

PM021916 Moscow PRAVDA in Russian 26 Mar 86 Second Edition p 4

[Special correspondent V. Okulov dispatch: "Principles of the Future Constitution"]

[Text] Kabul, 25 Mar--The first session of the commission for compiling the draft DRA Constitution has been held here under the chairmanship of Babrak Karmal, general secretary of the PDPA Central Committee and chairman of the DRA Revolutionary Council. It is well known that at present the document "Fundamental Principles of the DRA," adopted in 1980, acts as Afghanistan's provisional constitution.

By virtue of a DRA Revolutionary Council decree, the constitutional commission is made up of representatives of all nationalities and tribes and of all classes and social strata of society from the country's various provinces. Speaking at the session, Babrak Karmal declared that, in line with the promise made by the party to the people, the DRA must be progressive and democratic, founded on observance of the stipulations of Islam and the state's national values. The future DRA Constitution must reflect the fundamental interests of workers, peasants, artisans, nomads, the intelligentsia, other strata of the working people, private entrepreneurs, and all democratic and patriotic forces, nationalities, and tribes in Afghanistan. The Constitution must affirm respect for human rights, the policy of friendship and cooperation with all peoples in the region and in the world, and the principles of defending national independence, sovereignty, national integrity, and people's power in the DRA. The fundamental provision of the future document will be the strengthening of the unity and fraternal alliance of nationalities and tribes in revolutionary Afghanistan.

The Constitution will consolidate by force of law the need to implement the ideals of the April revolution.

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